

Nora Dahlhaus and Daniela Weißkopf (eds.)



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Future Scenarios of Global Cooperation – Practices and Challenges

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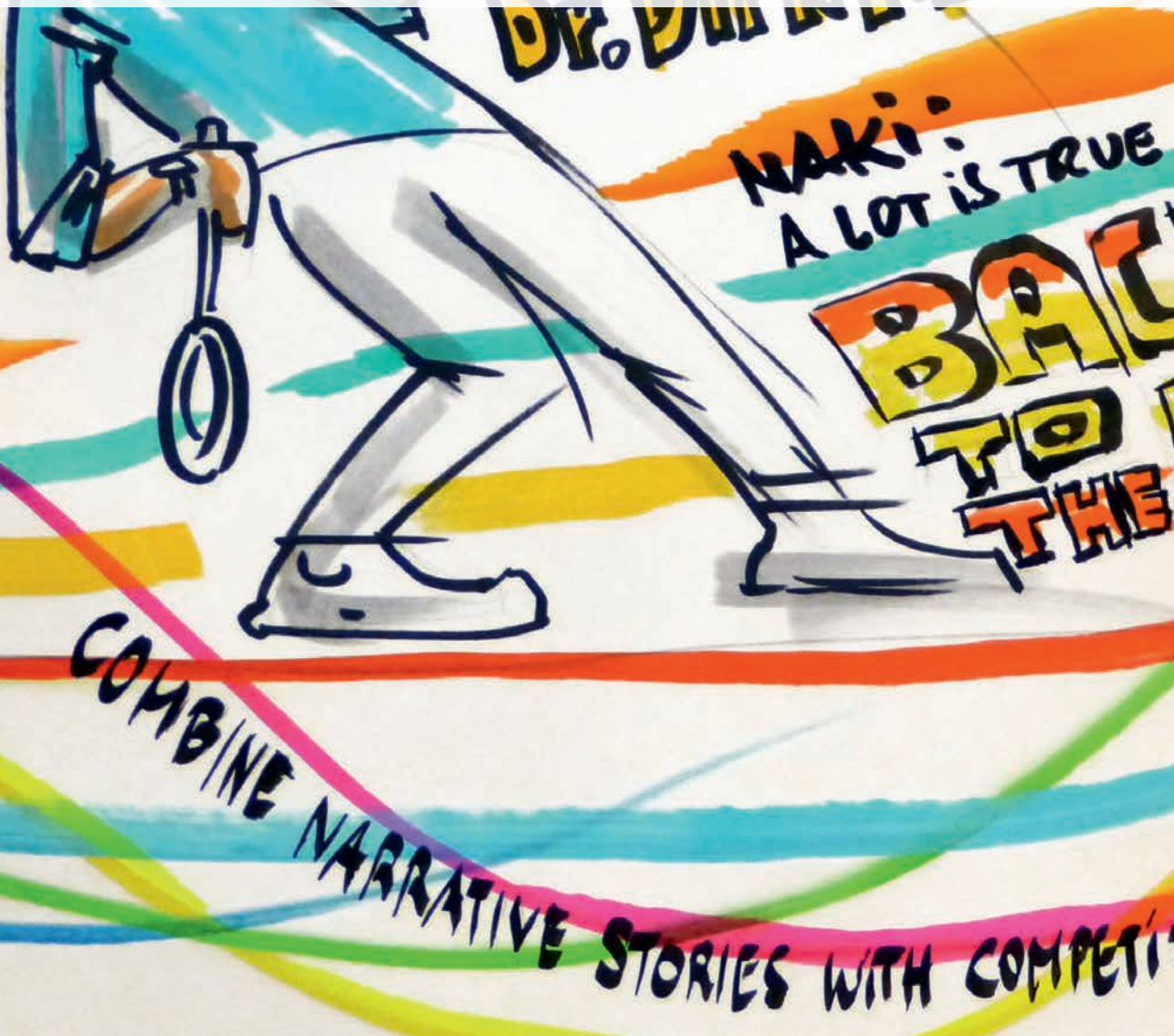
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Preface

Why are Scenarios Relevant for Cooperation Research?

Dirk Messner



The world can be characterized by dynamics of acceleration. The African population will double during the next three decades; global urban infrastructures will double by 2050; to stay below the 2°C guardrail and to avoid dangerous climate change, emissions need to peak by 2020 and be reduced to zero by 2050; digitalization has the potential to substitute for a large percentage of currently existing jobs during the next two to three decades. The decisions of states, firms and political actors during the next one or two decades will create very long-term path dependencies in the emerging global society. Shaping globalization has, therefore, an important time dimension. Acceleration, path dependencies and very long-term impacts of current decisions need to be taken into account in Global Cooperation Research.

The Käte Hamburger Kolleg/Centre for Global Cooperation Research therefore brought together scenario experts, integrated assessment scholars and science fiction authors – people who concentrate on what the futures of our societies might look like – with global cooperation researchers. All of them agreed that shaping the future, organizing transformation processes towards sustainability and investing in global cooperation to make globalization work for all means building on new narratives about possible futures. Narratives are about imagination, creativity, innovation, diversity. Without transformative narratives, we cannot go beyond incremental changes. At the same time, new joint narratives and we-identities, emerging in transnational networks, are cornerstones of global cooperation and of global intentionalities, which create the preconditions for transnational problem-solving.

Can we observe progress in this regard? Are transnational futures emerging? Are transnational narratives about cooperative global orders on the rise? Do they converge or diverge? Or are right-wing populist movements signalling exactly the opposite: instead of transnational narratives driving our societies, are nationalistic backlashes and 'Our Country First' perspectives undermining global cooperation?

We are in a transition period. The next two decades are decisive for the development of global cooperation in the 21st century. This *Global Dialogues* publication builds important bridges between scholars from very different disciplines which can help us to merge the knowledge of future scenario thinkers and pioneers of global cooperation research.

Introduction

Future Scenarios of Global Cooperation – Practices and Challenges

Nora Dahlhaus and
Daniela Weißkopf

The world is changing rapidly. Political, economic, social and environmental disruptions are leading to growing insecurity within states and societies around the world about what the future might bring. In the European Union, the political uncertainty which became painfully visible through the Brexit referendum in 2016 has shaken the confidence of many Europeans in a construct which they had previously taken for granted. In this and similar contexts, scenario building has become a popular instrument to deal with uncertainties and prepare for possible future realities. Scenarios are an important instrument to foster future strategies for international cooperation and to prevent crisis dynamics. By illustrating the different ways in which current global challenges might develop in the future, they urge the international community to consider the long-term effects of the decisions policy-makers take today. This Global Dialogue depicts the progress in the field of scenario building as well as the possibilities, problems and pitfalls that come along with it. With the explanation of techniques and examples, the reader will be able to understand the theoretical and practical use of scenarios, as well as their shortcomings and failures.

With regard to the growing European uncertainty, one of the major influencing factors was the increasing number of refugees in Europe since 2014, which strained the European bond of solidarity and empowered right-wing movements – a phenomenon previously assumed, perhaps optimistically,

to have been consigned to history. It also led to the insight that insecurity, war, political and economic instability in certain regions and global inequality will increase the movement of people around the world. Here, scenarios on possible movements of refugees and migrants in the future are already leading to changes in policies today. In Germany, for example, the term *Fluchtursachenbekämpfung* (combating the causes of migration and flight) has become a key word for development and security policy.

Scenarios on climate change, on the other hand, show that developing countries in the Global South will be hit hardest by this phenomenon. Global warming and desertification, storms and rising sea levels can no longer be regarded as challenges for the future: they are happening now. As a result, the fear of a worsening situation, the growing probability of food shortages, negative economic implications, conflicts and the loss of living space are triggering migration movements and insecurity within these regions. At the same time, the countries and regions most affected have contributed to least to global emissions and due to their often unstable economic and financial situation are less able to adapt to climate change. Their dependency on the policies adopted by the major emitting countries became even more visible with the election of Donald Trump in the US and his intention to withdraw from the Paris Agreement – a decision that makes the future even less predictable.

To tackle the predicted impacts, climate scenarios need to be considered in all the various policy fields. Scenarios produced by the Intergovernmental Panel on Climate Change (IPCC) and other climate research institutes have helped to raise awareness of the urgent need for international cooperation to solve global challenges at all levels, as the implementation of the Paris Agreement and the Sustainable Development Goals (SDGs) show. We can already see where parts of these agreements are being translated into national policies and how they affect our own lives.

Models of the likely impacts of climate change on coral reefs and other ecosystems but also on tourism and the fishing industry have influenced national policies. This shows clearly that scenarios can be used to build a bridge between existing knowledge on the most likely future developments and practical policies and can thus have a bearing on our everyday lives. Tourism is one example. Warming seawater, rising sea levels, more frequent storms and the absence of snow in skiing regions are just some of the visible climate effects which influence and are influenced by tourism. If, for example, corals die because the seawater becomes too warm, this has major adverse consequences not only for the ecosystem but also for the tourism industry in the country concerned. On the other hand, tourism itself has an impact on climate change

because it increases greenhouse gas emissions. Recognizing this linkage, several UN agencies and the Government of Tunisia held the First International Conference on Climate Change and Tourism in Djerba, Tunisia, in 2003. Related to the outcome of the conference, UNEP, the University of Oxford, the World Tourism Organization and the World Meteorological Organization published a document on 'Climate Change Adaptation and Mitigation in the Tourism Sector: Frameworks, Tools and Practices' which explained that:

The conference aimed to develop awareness among government administrations, the tourism industry and other tourism stakeholders, highlighting both current, and anticipated climate change impacts affecting tourism destinations and the need to carefully consider the consequences of climate change mitigation policies on tourism as well as the responsibility of the tourism sector to be a part of the solution by reducing its greenhouse gas emissions.¹

An interesting example of how climate change, nature conservation and tourism are interrelated can be seen in Australia, a country which is widely known for its unique nature and especially the Great Barrier Reef – a World Heritage Area the size of Italy. The Australian Government has identified various severe impacts of climate change on this important marine ecosystem. By the early 2000s, coral bleaching – a process which is caused by warming seawater and impacts the algae that provide the corals with energy, resulting in coral death – had affected over 50% of the reefs.² In 2016 and 2017, coral bleaching was observed for the first time in two consecutive years. In 2016, one fifth of the reef's coral was already dead and the ongoing heat in 2017 has given it no time to recover.³ While this development is caused by climate change in general and is therefore dependent on international climate protection policies, the Australian Government accepted its responsibility to enhance the resilience of the reef.⁴ For this purpose, the reef is segmented into zones within which different activities are permitted. Based on this new system, tourist activities are regulated and usually require a license, and commercial fishing and other activities in the reef region are subject to strict regulations. In this way, the government aims to protect the natural biodiversity of the endangered reef while enabling related industries, such as tourism, to continue with their activities.⁵ In light of the knowledge that climate change and its consequences will increasingly endanger the region in the future, protection policies are required in the present and were needed in the past – not only for the greater good of the environment but

¹ Simpson, Murray C. et al. (2008). *Climate Change Adaptation and Mitigation in the Tourism Sector: Frameworks, Tools and Practices*, Paris: UNEP, University of Oxford, UNWTO, WMO, 10.

² Great Barrier Reef Marine Park Authority (2007). *Great Barrier Reef Climate Change Action Plan 2007–2011*, 3.

³ The Economist (2017). *The Impact of Climate Change on the Great Barrier Reef: The Corals of the Reef have been Bleached White for a Second Year in a Row*, 5 May, <https://www.economist.com/blogs/economist-explains/2017/05/economist-explains-3>, accessed 26.09.2017.

⁴ Great Barrier Reef Marine Park Authority (2007), loc.cit.

⁵ Great Barrier Reef Marine Park Authority (2017). *Zoning, Permits and Plans: About Zoning*, <http://www.gbrmpa.gov.au/zoning-permits-and-plans/zoning/about-zoning>, accessed 26.09.2017.

also because it was important to avoid the economic impacts of a dying coral reef.

The example shows that if scenarios can enhance our understanding of the consequences of ignoring a development and lead to actual policy changes, they may be regarded as successful. Even so, it is important to consider that the future is not perfectly predictable.

Events over recent years have made it clear that there is not *one* future, that we cannot rely on what we thought would be there forever, and that the way in which the world develops depends on the actions taken by each and every individual. Even though the implementation of international agreements on sustainability and environment protection can already be observed in our daily lives, the question of individual responsibility is crucial for climate scenarios.

Over the last twenty years, for example, more and more countries worldwide have taken action to fight plastic waste. Rwanda, Kenya and China, but also many European Union member states, have banned free plastic bags. Some large companies such as McDonalds and Starbucks, but also small cafés and restaurant chains, encourage their customers to bring their own coffee mugs instead of taking coffee-to-go cups away. In the context of energy saving targets, eight years ago, the European Union introduced legislation to replace incandescent light bulbs with energy saving lamps. At that time, the ban on incandescent light bulbs met with resistance and skepticism among many consumers, especially in Germany.

Today, support for climate and environmental protection is rising at the individual level, according to a recent survey by the German Federal Environment Agency⁶. In many areas, however, there is no fundamental change in behaviour. Even if consumers pay attention to energy efficiency when purchasing cars or technical devices, this will not be sufficient to compensate for rising electricity consumption and high CO₂ emissions. The need to adjust consumption behaviour to meet the challenge of global warming is not yet reflected in most people's habits and lives. In Germany, the federal transport infrastructure strategy now includes – for the first time – plans to extend the construction of cycle paths as a means of supporting low-emission transport options. Even so, it national policy-makers and industry still seem to give higher priority to economic interests than to environmental concerns – as the Volkswagen emission scandal has recently shown. So we need to ask ourselves how we can promote a sustainable future at all levels and where we set our personal priorities.

Our viewpoints on global challenges such as climate change are influenced not only by scientific scenarios, but also by those scenarios we are confronted with in our everyday lives, for example when we go to the cinema or browse in a bookstore.

⁶ Benthin, Rainer, and Gellrich, Angelika (2016). *Umweltbewusstsein in Deutschland 2016: Ergebnisse einer repräsentativen Bevölkerungsumfrage*, Berlin: Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit, http://www.bmub.bund.de/fileadmin/Daten_BMU/Pool/Broschueren/umweltbewusstsein_deutschland_2016_bf.pdf, accessed 26.09.2017.

While scientists try to predict climate change impacts, migration routes, conflicts, population developments and other politically important trends, the arts engage differently with the future. Uncoupled from academic restrictions but somehow connected to reality, dystopian and utopian literature describes possible futures and science fiction expands the horizons of what is thinkable in the future. There has been a long tradition of artists – science fiction writers, film directors and painters – envisioning future(s). George Orwell's dystopian novel 'Nineteen Eighty-four', written in 1949 about a future surveillance state in which 'Big Brother is watching you', for instance, is more relevant than ever when we talk about Big Data and the digitalization of the human being. Movies like 'The Day After Tomorrow' about the consequences of climate change illustrate an apocalyptic future scenario of life on Earth and even appear to have significantly influenced public awareness of the vulnerability of the climate system.⁷ Besides creating space for creative future thinking and imagining future scenarios, narration has always been relevant in people's lives, influencing their views of life, their thinking and their actions. Narrative perspectives help us to empathize with different characters and let us slip into other worldviews than our own. Fictional writing therefore adds to the scenarios' potential not only to build empirical knowledge of possible futures, but also to foster mutual understanding and connect stories of the future beyond borders and cultures.

In recent years, political and social scientists have focused more and more on findings from literature or psychological studies to understand what role narratives play for social cohesion and how they impact on societal and political change. Currently, we find that existing narratives, with which we have identified, are losing their credibility. Narratives such as the European story of peace and prosperity and the US narrative of the 'American Dream' have become less convincing, especially since the global economic crisis. Former US President Barack Obama, in an interview with the *New York Times*, pointed to the role reading novels and stories played during his time at the White House. He states that looking back into historical literature and examining how authors once saw and described humankind can help us to identify recurring patterns and assess current dynamics. Identifying narratives from the past and the present can encourage us to promote narratives that support global cooperation. Even though none of the scenarios we are building now will become reality as they stand, they all help in preparing for many possible developments and show where action is needed to prevent undesirable consequences of current activities or plans. The future is not unchangeable, and scenarios show that different courses of action lead to different outcomes. Narrative scenarios which are built on

⁷ Leiserowitz, Anthony (2004). 'Before and after The Day After Tomorrow: A U.S. Study of Climate Change Risk Perception', *Environment* 46 (9): 22–37, <http://environment.yale.edu/leiserowitz/climatechange/TDAT.html>, accessed 26.09.2017.

scientific findings or creative fantasies of possible future developments therefore help us to face the uncertainties of the future. They outline the many different ways – positive and negative – in which the world and humanity might develop.

In this Global Dialogue, the authors explore methods and techniques that help to make use of scenarios as an instrument for future analysis. They ask how science and politics can be brought together to create scenarios and how states can be convinced to foster cooperation for a sustainable future; how sustainable goals are internalized from an early age onwards; and which internal and external barriers conflict with sustainable development. Philosophical and literary perspectives also underline the potential of narrative scenarios to expand the boundaries of our thinking. In this way, the Global Dialogue aims to depict the possibilities, problems and pitfalls of scenario building and shows the reader what scenarios are actually used for and where they fall short of their objective.

The initial idea for this Global Dialogue evolved from the Masterclass on 'Future Scenarios of Global Cooperation – Practices and Challenges' which took place in Essen in March 2017. This event brought together experts from all over the world to discuss global present and future challenges such as climate change and the Sustainable Development Goals. Coming from diverse backgrounds ranging from political science and literature studies to economics, the participants offered unique insights into possible scenarios of the future. This Global Dialogue aims to capture their thoughts and lines of argument and makes them accessible to a wider audience.

In a first step, the Global Dialogue addresses the question of how social sciences can contribute to the understanding of future scenarios of global cooperation. One of the central questions is whether scenario building, which has so far been mainly applied in the field of natural science, should introduce social science perspectives to a greater extent for the purpose of better assessing social dynamics. A further question to be explored is whether social science is sufficiently well-prepared to engage in future scenario analysis or whether methodological innovations are necessary in this regard.

Nebojsa Nakicenovic and **Caroline Zimm** point to the urgency of finding ways to implement the Sustainable Development Goals successfully and achieve transformational change. They warn that time is running out for the world to stop climate change. If global warming reaches the *tipping point* of two degrees, the Arctic ice sheet will melt, sea levels will rise and catastrophes such as floods and hunger crises will be inevitable. Nakicenovic and Zimm emphasize that strengthening not only the Earth's but also social systems' resilience is a global goal that transcends national borders and sovereignty. They argue for an interdisciplinary approach that considers not only green

technical innovation but also social science theories, which can help us to identify future pathways of social change. In this context, Nakicenovic and Zimm introduce the World in 2050 initiative, which has established a network of scientists from various research fields to find new methodological approaches for using scenario building as a tool to lead us out of the Anthropocene into a sustainable future.

In his contribution 'How social science can help us understand and shape the future of global cooperation', **Thomas Hale** is also looking for innovative methodological approaches. Hale raises the question whether multilateral governance is at risk in terms of institutional inertia and fragmentation and how we can move global cooperation forward. In their current form, the social sciences are not capable of doing so, Hale claims; he argues that social scientists must develop new methodologies to understand global cooperation. In this regard, Hale criticizes that social sciences relies on drawing conclusions from the past, instead of looking into the future. Hale agrees that the explanatory power of socio-scientific forecasting quickly reaches its limits due to multi-causality and outlier cases. However, the global challenges demand that science look into the future and find techniques that make this possible. Hale names three set of tools for social scientists to explore the future of cooperation: extrapolating from current explanations, modeling and scenario analysis. He points to the great potential of the modeling and scenario analysis approach for making precise predictions and teasing out eventual 'priors' without neglecting methodological weaknesses.

Michael Reder approaches the topic from a philosophical perspective. He concentrates on the self-understanding of science and its meaning for the development of future scenarios and narratives. Reder critically examines academic research's claim to generate knowledge independently from politics and society. He argues that scientists are also part of a political and social reality and encourages them not to neglect but rather to reflect their relationship to the social and political sphere critically. In this context, Reder tackles the question of how political deliberation and scientific scenarios can be brought together. Basing his thinking on Habermas, he develops a pragmatic model of a new self-understanding of science in which society is understood as a dynamic network and scenarios are developed from deliberative processes reflecting the complex interplay of experiences and preferences. In this context, Reder suggests that disjunctions between science and politics need to be set aside and replaced by reciprocal communication.

Stefan Lechtenböhmer presents a practical example of a participatory approach in a scenario that brought scientists and politicians together. With reference to the development

of the North Rhine-Westphalian climate protection plan, he illustrates the opportunities and challenges facing an inclusive process of scenario building. Stakeholders from industry, politics, civil society and science were asked to develop scenarios that included strategies, measures and potential for climate protection in North Rhine-Westphalia. The underlying intention of the participatory approach was to improve stakeholders' identification with the project objectives and provide incentives for active involvement in the implementation process. Several workshops were conducted in a bottom-up process and resulted in six different scenarios. Lechtenböhmer describes how difficulties among stakeholders, especially from industry and non-governmental organizations, stemming from different notions of how to emphasize scenarios, had to be overcome. He also points to the positive conclusions participants draw from the planning process, such as the development of trust and understanding of the other parties' perspective or recognition of the role of science as an important driver of innovation.

The second part of the Dialogue focuses on specific challenges for global politics that will shape the future of humankind. In this context, there are two main challenges global governance institutions and states have been trying to tackle: climate change and sustainable development. These important global developments are therefore the focus of most research dealing with future problems and possibilities and are widely discussed within the scientific community.

Lothar Brock chooses a historical approach. His contribution focuses on the origins of the debate on sustainable development at the international level. Firstly, Brock shows that global cooperation, while based on good will and serving a common good, is inseparably linked to particular interests. Cooperation thus means not only an alternative to confrontation, but also that conflicts of interest are managed through diplomacy. Brock argues that this ambivalence can be observed in the history of the UN conferences and retraces the origins of the SDG agenda and the Paris Agreement. In a second part, Brock draws conclusions from his analysis for the future development of cooperation on the SDGs. He states that in addition to their practical advantages, such as the reduction of transaction and time costs, multilateral negotiations have socialization effects and foster the development of a common normative framework. This strengthens the universality of sustainability standards and can help to bring global cooperation forward. Since some countries, such as the USA, are still opposing this promising trend, Brock argues that science should focus on researching nation-states' opposition and resistance and explore political authority beyond the state to find out how the global shift to a multilateral world order can be utilized further in developing a more cooperative global community.

While Lothar Brock's text paints a broader picture of the Sustainable Development Goals, their evolution and their implications, **Bettina Mahlert** focuses on the need for an individual understanding of the consequences of non-implementation of the SDGs. She firstly draws attention to the similarities between the Sustainable Development Goals and scenario building by describing Pierre Wack's scenarios at Royal Dutch/Shell. Even though the scenarios predicted the oil crisis, the company did not react. On this basis, an understanding developed that a change in behaviour needs more than just cognitive knowledge: it requires internalization of the need for change. Mahlert points out the similarities between this case of scenario building and the SDGs, for example that both cases need long-lasting transformation in behaviour. Addressing three related questions, Bettina Mahlert describes the discussion that evolved around the Sustainable Development Goals and ways to foster their implementation. She concludes that we have not yet sufficiently internalized the consequences of ecological destruction for our lives, even though this is a precondition for a sustainable implementation of the SDGs.

With regard to the work for a more sustainable future, **Christian Berg** points in his contribution to the need to 'expect the unexpected'. As basic conditions might change, all possible challenges need to be taken into account. Berg develops a typology of barriers that hinder sustainable development, differentiating between 'intrinsic' and 'extrinsic'. 'Intrinsic barriers', which are seen to be inextricably tied to the concept of sustainability, are for example conflicts of interest or trade-offs. 'Extrinsic barriers' are coincidental and independent from the concept of sustainability. An example here is the short-term orientation of incentive structures in societies. The typology helps to identify needs to operationalize sustainability. On this basis, Berg develops ten principles for sustainable action which take an actor's perspective on the topic. Through this bottom-up approach, Berg aims to address the barriers in a way that is approachable for individuals and therefore promotes 'a more sustainable global society'.

Images of more sustainable global futures are also the context within which **Emilio Lèbre La Rovere**'s contribution can be situated. Compared to Christian Berg, he chooses a micro-focus, looking at Brazil as a specific country and climate change as a specific topic. The case of Brazil is unique as the country has low per capita energy-related greenhouse gas emissions compared to the major emitting countries. At the same time, Brazil still needs to grow economically to improve living standards. La Rovere examines this country's dilemma of promoting much-needed development while trying to avoid growing greenhouse gas emissions. Here, he introduces a study that builds upon scenarios of the economic and social

implications of different sets of GHG mitigation measures in Brazil, coming to the conclusion that mitigation strategies not only reduce greenhouse gas emissions but can also foster economic growth and increase household incomes.

Linking climate change with the likelihood of conflicts, **Halvard Buhaug** adds a new dimension to the possible scenarios of the future in the context of rising temperatures. To introduce his argument, Buhaug explains that in recent decades, most conflicts have taken place in warm and tropical areas around the Equator. He points out that even taking other factors into account, the 'climate effect' still has statistical relevance. On this basis, Buhaug explains that these areas are already at risk of droughts and heat waves, which can affect food security, for example. Climate change will most likely worsen this situation and promote these kinds of indirect drivers of conflicts. In his conclusion, Buhaug also points to the reverse link between climate change and conflict. As conflicts lead to political instability and low economic growth, the population's vulnerability to climate risks increases. As developed societies possess the means and the political will to tackle climate-related challenges while conflict-ridden countries usually do not, Buhaug sees the danger of a 'vicious circle of instability and underdevelopment'. Therefore, peacebuilding can be seen as an important climate resilience strategy in war-torn countries.

Finally, the Dialogue addresses the question of how the scenario approach can benefit from other perspectives and offers an insight into future scenarios from science fiction and literature studies.

In the first contribution in this part of the Global Dialogue, **Karlheinz Steinmüller** explains techniques behind scenario building and examines its relationship with science fiction. He points out that scenarios are a tool to predict the future, building on expectations and assumptions and taking into account uncertainties and human action. Even though scenarios may help us to spot certain developments, the real future will never look exactly like a scenario. Steinmüller elucidates the different kinds of scenarios, explaining that scenarios are either normative, questioning what kind of future we want, or explorative, looking at what kind of future we have to expect. He goes on to describe some of the scenario projects in which he was involved, such as FESTOS, which aimed to raise awareness of security threats posed by the potential abuse of new technologies. By comparing foresight with science fiction, he brings together these two strands in the form of narrative scenarios. Steinmüller defines seven steps in the writing of narrative scenarios. This technique, he concludes, makes it possible to overcome the shortcomings of foresight and science fiction alike. It can thus be used as an effective tool for communicating with target groups.

In her posthumanist reading of Wanuri Kahiu's *Pumzi*, a short film set in a dystopian landscape after World War III, where natural life has almost completely vanished, **Susan Arndt** shows that it is not only science but also art which engages with possible developments in the future. Before going into the details of the movie, Arndt develops 'Futures' as a category of analysis, emphasizing that there is not the one fixed future. The term should also imply that future is shaped by different agents and interests and some possible futures might not come into existence due to the dominance of others. On this basis, Arndt explains that future is highly related to power distribution and therefore unevenly shared. She goes on to analyze how the main character of the movie breaks out of the predetermined future and plants the first seeds to grow organic life back on Earth. With regard to our world, Arndt concludes that the movie shows that solidarity and responsibility across species and beyond a culture-nature divide can shape alternative possibilities for the future.

Ottmar Ette illustrates the importance of literature for the creation of new transcultural perspectives. Reflections from the writer Amin Maalouf, who identifies the cultural dimension of globalization as a determining factor for human future, serve as a starting point for Ottmar Ette to describe that living together in peace and cultural difference is the challenge and solution of our time. He claims that thinking in categories of alterity needs to be overcome. Instead, cultural differences should be perceived in a polyperspectival manner. In this context, Ette understands literature as a corrective to unification and simplification. He explains that the literatures of the world reflect the diversity of languages and different experiences from cultures and communities. Ette argues that literature not only preserves memory, but also registers current trends of change and points to possible futures. Against the backdrop of recent developments, such as the refugee flows to Europe, he assumes that the Eurocentric understanding of world literacy will be replaced by what he calls 'WritingBetweenWorlds'. Like increasing individual mobility, literature is also moving and reflecting life realities, which are increasingly cosmopolitan and less aligned to geographical boundaries. Ottmar Ette encourages us to recognize that the European realities are characterized by the experience of migration, and that multilingual and polylogical thinking is necessary for successful coexistence.

This Global Dialogue aims to enhance understanding of how scenario building can be used to develop possible futures of cooperation. It therefore contributes to one of this year's major research goals at the Centre for Global Cooperation Research. The Centre is one of the main research institutes at the University of Duisburg-Essen. Coming from a methodological approach of plurality and transdisciplinary, the Centre aims

to enhance understanding of the possibilities and limits of transboundary cooperation. The Global Dialogue is part of a series of events organized by the Centre on the topic of scenario building. It links discussions from the Masterclass and a new workshop series on 'Migration, Scenarios and Climate Change' which will start next year and will explore futures of European migration policy. We therefore hope that this Global Dialogue will be a prelude to further multi-perspective and interdisciplinary discussions on future scenarios and wish a thought-provoking and entertaining read.

Part I

Different Scenario Approaches and What Social Science Has to Offer

POPULATION

FUTURE

Back to the Future: The Role of Quantitative Scenarios and Narratives in Understanding Transfor- mation to Sustainability¹

Nebojsa Nakicenovic
and Caroline Zimm



¹ This article is based on a previous research paper: Nakicenovic, Nebojsa et al. (2016). *Global Commons in the Anthropocene: World Development on a Stable and Resilient Planet*, IIASA Working Paper, Laxenburg, Austria: International Institute for Applied Systems Analysis (IIASA), see: <http://pure.iiasa.ac.at/14003/>.

Urgency

The historic Paris Agreement on Climate Change adopted in December 2015 sets out an ambitious and aspirational goal for humanity of limiting global warming to 'well below' 2° Celsius, which implies net zero greenhouse gas emissions by mid-21st century. Reaching this goal would require regular reviews and improvement of Nationally Determined Contributions. Structural change in all sectors and countries, including new behaviours and regulatory mechanisms, will be also required in addition to mobilizing huge volumes of investment, including the US\$ 100 billion a year in support of the Green Climate Fund (UNFCCC 2015).

Yet the world is currently heading toward the opposite direction, away from the ambitious Paris goals. Populist governments are opposing scientific findings related to climate change and action for climate mitigation, for example. We need a counterforce to nudge global development in the right direction so we can start implementing the required actions to fulfil the Paris Agreement. Time is running out; the later the needed transformational changes start, the harder it will be to achieve the future we want. Such a turn in the right direction might lead to conflict between opposing constituencies. Some will benefit from this transformation and others will lose, providing the motivation to mobilize against change.

Humanity can only try to learn from history and understand what the human impact on Earth is and learn how we can alter our actions. We have a plethora of choices (e.g. from behaviour to technology) that vary not only in their short-term but also in their long-term effects. In deciding on future development pathway(s), an important decision will be how to bend the development curve towards sustainability as soon as possible, ideally immediately.

The sustainability challenge is enormous, especially considering the remaining inequality in the world. The high affluence of around one billion people has led to global-scale environmental problems. The 'global middle class,' which is estimated to grow from 1.8 billion in 2009 to 3.2 billion by 2020 and 4.9 billion by 2030 (Pezzini 2012), is also expected to take up resource-intensive lifestyles following the trend of consumerism in developed countries (Kharas 2010). At the same time, several billion people have not benefited from this development: 2.4 billion still do not have access to sanitation (WHO and UNICEF 2015) and three billion lack access to clean cooking technologies (GEA 2012), but they do have to bear the brunt of the negative externalities associated with development and transgression of the planetary boundaries.

So not only do we have to reduce negative impacts which are already occurring but we have to do so while improving the lives

of the population excluded so far from the benefits of many advances of human development. Doing this falls nothing short of a new revolution after the Neolithic (Agricultural) and the Industrial Revolution, which fundamentally changed humanity and our relationship with the planet.

Perhaps we can argue that the United Nations 2030 Agenda and its 17 Sustainable Development Goals (SDGs) adopted by the UN General Assembly in September 2015 are a symbolic starting point for this sustainability revolution. The SDGs

[...] provide an aspirational narrative for the desired future for human development with an actionable agenda. The aspiration is for a world free from hunger, injustice and absolute poverty, of universal education, health and employment with inclusive economic growth, based on transparency, dignity and equity, all achieved within the boundaries of the planet [(UN GA 2015)]. The urgent question now is how to act on this aspirational agenda and to have a clear understanding of the full consequences and cost of inaction and the benefits of achieving the SDGs [...]. (TWI2050 2017: 1)

This next revolution needs to cover a plethora of elements to achieve the SDGs, such as technology, governance, economic and social systems, demography, knowledge and values.

Great Acceleration and Anthropocene

The Holocene provided the planet with a stable global climate, abundant ecosystem services, rich biodiversity, fertile soils and oceans and a healthy atmosphere. In the Holocene, the environmental conditions on Earth stabilized as a result of external (solar/planetary) forces and internal biophysical processes between biosphere, hydrosphere, atmosphere, cryosphere and geosphere settling into a new planetary equilibrium. It is within this biophysical equilibrium that seasons (winter, spring, summer and autumn) not only establish themselves firmly but become more reliable. Those early settlers crossed a critical threshold where, in at least eight out of ten years, rains would fall and temperatures greater than 15°C would be reached for planting, and a growing season of greater than 90 days could be counted upon, thus providing a high probability of a successful harvest (Rockström and Klum 2015).

We argue that it is the Agricultural Revolution that constituted the prerequisite for modern civilizations to evolve. An Earth system in a stable and resilient state, with the Holocene as

our human reference point, may thus be a necessity for human prosperity and world development. The conclusion from this scientific insight is as basic as it is dramatic. With the evidence we have at hand, we can state that the interglacial state of the Holocene is the only state of the planet that we know for certain can support a world population of 7.4 billion (Rockström et al. 2009), soon to approach nine to ten billion. It is correct that modern humans have survived, and thus could survive, outside of a Holocene-like planetary stability, but there is no evidence that a globally connected society providing a minimum quality of life could flourish.

While the Industrial Revolution created the conditions for a radical change in how humans live and consume, the most profound growth occurred after the Second World War. The 1950s witnessed the beginning of what has become known as 'the Great Acceleration' in human activity (Steffen et al. 2004; Steffen et al. 2011; Steffen et al. 2015b) (*Figure 1*). From international tourism and foreign direct investment (FDI) to population and gross domestic product (GDP), the pace and scale of change have taken on an exponential trajectory. The Great Acceleration has delivered huge improvements in human wellbeing for parts of the world's population, but this has come at a cost: Earth's resilience to change – its ability to absorb shocks and remain stable – is declining rapidly. Disaggregating population and GDP by developed and developing nations shows that this phenomenal growth is largely driven by globalization and neoclassical economic policies that propel growth at all costs by promoting ever higher production and consumption in wealthy nations, not population growth *per se* (Steffen et al. 2015a).

Sometime after 1950, the Earth system strongly coupled with the socioeconomic system – the oceans, atmosphere and diversity of life that together keep the planet habitable. Today, the socioeconomic system is impacting the Earth system at an unprecedented magnitude and speed (*Figure 2*), (Crutzen and Stoermer 2000; Crutzen 2002; Steffen et al. 2004; Rockström et al. 2009; Waters et al. 2016). With increasing population and GDP, the human system is steadily infringing on Earth's buffering capacity, threatening Earth resilience. This indicates that the relationship between humans and the planet has changed. The so-called Great Acceleration has led humanity and the planet out of the Holocene. It has been proposed that we have entered a new geological epoch, the Anthropocene, as humans leave such strong traces on earth, threatening earth stability and resilience. It is not known where humanity may end up along the Anthropocene trajectory, nor is it known whether the state of the planet would be in any way comparable to the Holocene.

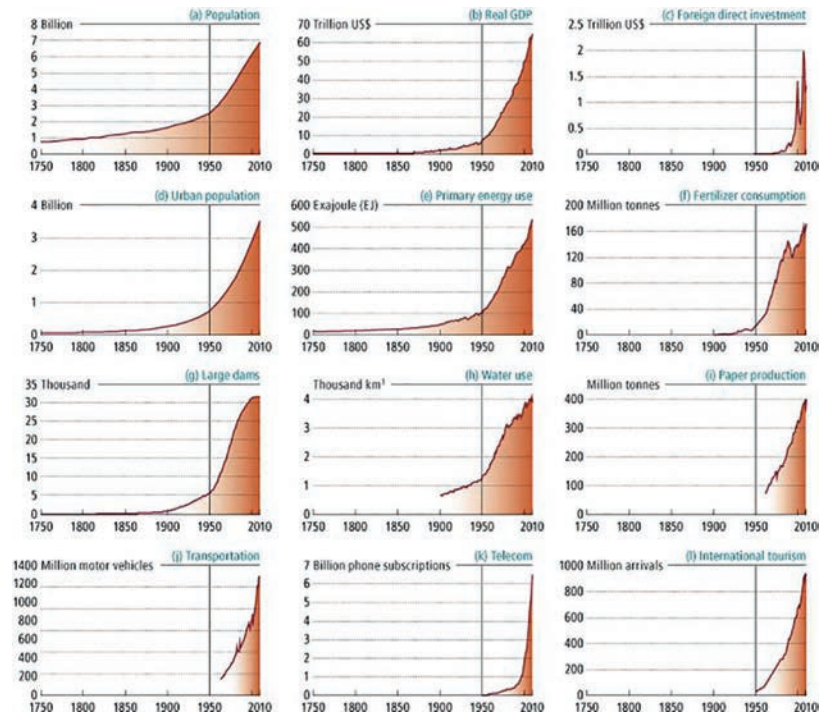


Figure 1: The Great Acceleration – socioeconomic trends in (a) population, (b) real GDP, (c) FDI, (d) urban population, (e) primary energy use, (f) fertilizer consumption, (g) large dams, (h) water use, (i) paper production, (j) transportation, (k) telecommunications and (l) international tourism. Source: Steffen et al. 2015a.

Tipping Elements and Global Commons

The notion that a single stable equilibrium is the natural state of Earth is not supported by observations of past global changes (Steffen et al. 2004). The behaviour of the Earth system is typified not by stable equilibria, but by strong nonlinearities, where relatively small changes in a forcing function can push the system across a threshold and lead to abrupt changes in key aspects of system functioning where the internal dynamics of the system kick in and accelerate change – we call these ‘tipping elements’ or ‘tipping points’ (Lenton et al. 2007). Examples include the rapid ending of ice ages, the exceptionally rapid warming and cooling events in the North Atlantic region, megadroughts and other extreme events.

Scientific knowledge of complex ecological and social systems has grown significantly in recent decades. Incremental change may push a system – a city, economy, forest or fishing zone, for example – to a bifurcation point where, after incremental change, it is pulled irresistibly toward a new basin of attraction and so a new equilibrium state.

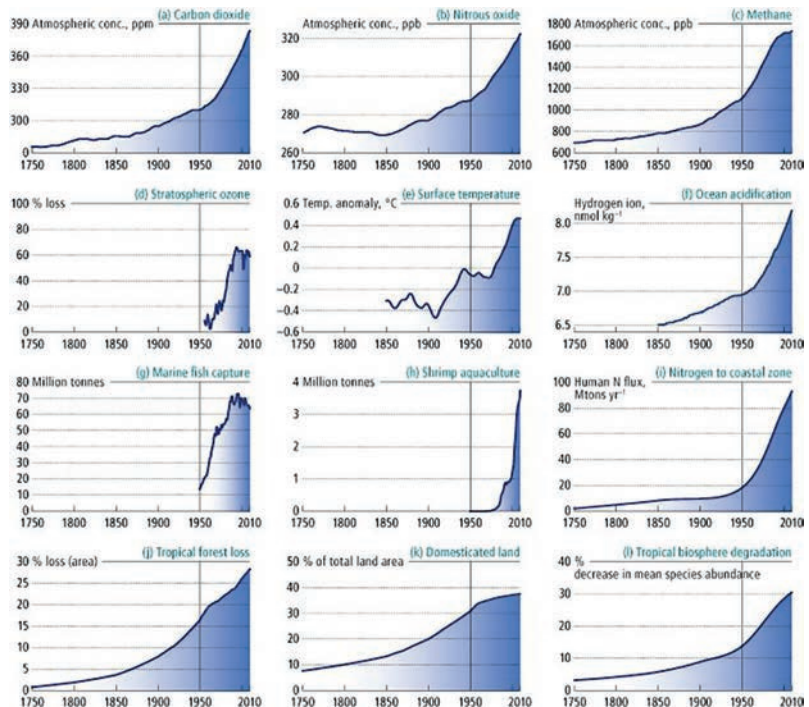


Figure 2: The Great Acceleration – Earth system trends in (a) carbon dioxide, (b) nitrous oxide, (c) methane, (d) stratospheric ozone, (e) surface temperature, (f) ocean acidification, (g) marine fish capture, (h) shrimp aquaculture, (i) nitrogen to coastal zone, (j) tropical forest loss, (k) domesticated land (land use change) and (l) tropical biosphere degradation. Source: Steffen et al. 2015a.

Or a system, after long periods of incremental change, may suddenly collapse irreversibly into a new state.

Analysis of the large-scale subsystems of the Earth system – ocean circulations, permafrost, ice sheets, Arctic sea ice, the rainforests and atmospheric circulations – indicates that these systems are prone to large-scale change and collapse (Lenton et al. 2007). Moreover, human activities, such as industrial scale farming and fishing, are reducing the resilience of these subsystems to absorb shocks, and pushing these subsystems toward new states. If one system collapses to a new state, it may set up positive feedback loops, amplifying the change and triggering changes in other subsystems. This might be termed a ‘cascading collapse’ of key components of the Earth system. Given that the stability of the Earth system underpins human civilization and welfare, avoiding this fate would seem to be an attractive course of action.

Understanding the complex interactions between rapidly changing systems is an active area of research. Sea ice thickness and area are shrinking in the Arctic. As the sea ice melts,

it exposes dark ocean underneath which absorbs more heat than the white surface, thus causing more warming and so melting in the region. Warmer water is contributing to the melting of the Greenland ice sheet which is pouring more freshwater into the north Atlantic, potentially interfering with the north Atlantic overturning circulation. All these events can potentially affect El Niño in the Pacific Ocean, which affects melting in Antarctica, the Indian monsoon, rainfall in Africa and coral reefs.

A recent analysis of tipping elements in the Earth system indicates that at temperatures of between 2–3°C above pre-industrial levels, the risk of the subsystems of the Earth system collapsing becomes high, although many uncertainties remain (Schellnhuber, Rahmstorf, and Winkelman 2016). *Figure 3* shows the evolution of global temperature for the past 20,000 years, including the relatively stable climate during the Holocene since around 10,000 years ago. The Representative Concentration Pathways (RCPs) provide scenarios on possible future temperature levels to 2100, based on different trajectories of greenhouse gas concentration and how this is related to global warming (van Vuuren et al. 2011). ‘This analysis follows the tipping point definitions of Lenton et al. (2007) where irreversibility is not a requirement, hence the inclusion of sea ice cover. Earth has now reached 1°C above pre-industrial levels as a result of human actions. With locked in emissions and inertia in the socioeconomic system we are virtually committed to about 1.5°C (Rogelj et al. 2015). Moreover, while nations have agreed to keep global temperature increase well below 2°C with a long-term aim of stabilization at 1.5°C, aggregated current national proposals to reduce emissions will lead to a warming of 2.7–3.5°C (Climate Action Tracker 2015).’

Several of the tipping elements that are crucial for planetary resilience and stability and could possibly switch within that range fall within national jurisdiction (e.g. coral reefs). The stability and resilience of the earth are common to us all, so this calls for a new concept and governance of global commons in the Anthropocene. In the Anthropocene, local commons can become global commons because of their importance for planetary resilience, regardless of national sovereignty.

Scenarios for the SDGs

We need to understand how we can leave the Anthropocene and navigate to a safe place for humanity. One way to do this is to develop scenarios. Scenarios are plausible stories that are useful for exploring future societal and economic development and are supported by quantifications.

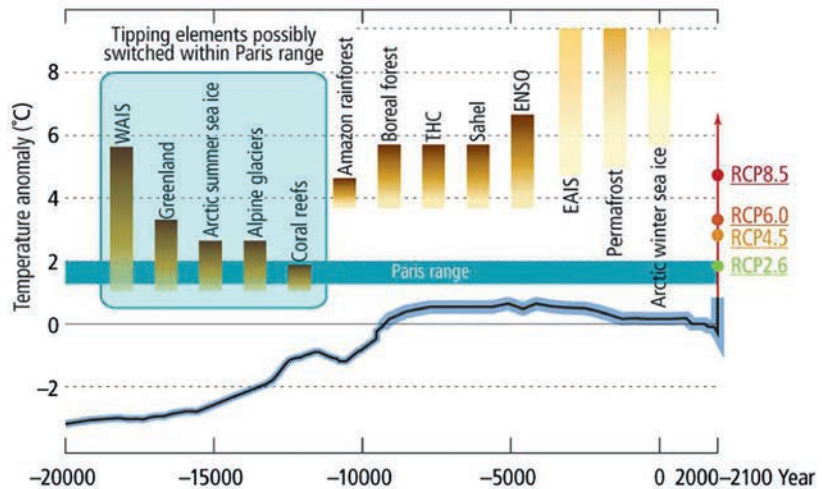


Figure 3: Evolution of global mean surface temperature from the Last Glacial Maximum through the Holocene and future global warming scenarios (RCP, Representative Concentration Pathways) related to tipping elements. WAIS, West Antarctic ice sheet; THC, thermohaline circulation; ENSO, El Niño-Southern oscillation; EAIS, East Antarctic ice sheet. Adapted from Schellnhuber, Rahmstorf, and Winkelmann 2016.

They are the main tools suited to investigate alternative futures under a set of assumed conditions, including uncertainty and complexity related to future challenges (Nakicenovic et al. 2000). The literature on scenarios is huge; there are more than 1,000 global scenarios available just in the context of climate change (IAMC 2014).

With the adoption of the SDGs a more holistic approach is called for. We need to develop integrated scenarios to aide implementing the SDGs as climate-only scenarios do not address the amplitude of development challenges we are facing. 'What is lacking, but urgently required, is an assessment of the viability of achieving these multiple social-economic-environmental-planetary goals simultaneously using integrative and systemic methodological approaches.

The World in 2050 (TWI2050) initiative is a global research initiative launched by the International Institute for Applied Systems Analysis (IIASA), the Sustainable Development Solutions Network (SDSN), and the Stockholm Resilience Center (SRC) that aims to fill this knowledge gap. The initiative brings together a network of leading policymakers, analysts, modelling and analytical teams, and organisations from around the world to collaborate in developing pathways toward sustainable futures and policy frameworks needed for implementing the SDGs, and more importantly, for achieving the needed transformational change. TWI2050 aims not only to contribute to this understanding, but also develop

² TWI2050 (2017). *The World in 2050 (TWI2050)*, Concept Note.

science-based transformational and equitable pathways to sustainable development that can provide much needed information and guidance for policy makers responsible for the implementation of the SDGs.²

The work on developing the integrated alternative futures across scenarios is to a large extent based on modelling approaches and narratives. What is lacking in that rich literature is the integration of social sciences and better understanding of human behaviour (e.g. theories of social change, language, anthropology). There are several ways to enrich current modelling approaches with social sciences; social sciences can support model development, contribute to model assumptions as well as the analyses of results.

‘The challenge of identifying interconnected pathways lies in understanding how complex and sometimes competing objectives can be met at global, regional, national, and sub-national scales. Furthermore, these synergies and trade-offs across SDGs (Griggs et al. 2014; Nilsson, Griggs, and Visbeck 2016) come with a price which is crucial for policy makers and investors. Initial estimates of investment needs (WIR 2014; Schmidt-Traub 2015; Jakob et al. 2016) have not fully taken these into account. Only assessing a few sectors, McCollum, Krey, and Riahi (2011) found synergies of decarbonization and energy efficiency with regards to pollution control and energy security of \$100–600 billion annually (0.1–0.7% of GDP) by 2030.’³

More integrative and inclusive development of scenarios based on a holistic approach across sectors and disciplines could better identify alternative development paths for our society resulting in multiple benefits. More insight is needed to assess how all 17 SDGs interact and what a sustainable transformation of humanity could look like. ‘TWI2050 seeks to build bridges across different scientific communities by inviting communities to contribute to broadening the Integrated Assessment Models (IAMs) approach through new methodological approaches, especially with regards to the social, institutional, governance oriented and qualitative goals. Furthermore, TWI2050 provides the essential framework for intercomparison to robustly inform policy makers in implementing the 2030 Agenda through identifying crucial branching points.’⁴

³ Nakicenovic, Nebojsa et. al (in preparation). *Towards Pathways for Global Sustainability in 2050 and Beyond*.

⁴ Ibid.

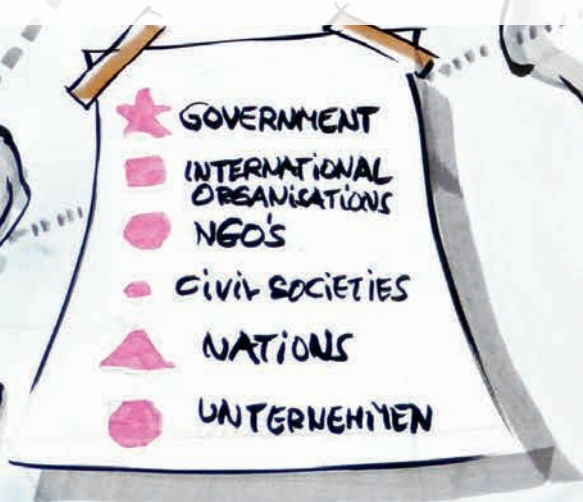
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How Can Social Science Help Us Understand and Shape the Future of Global Cooperation?

Thomas Hale



Can we study what has not yet happened? If so, can we understand the future well enough to shape it? These questions, which animated a lively discussion at the Masterclass, are of critical importance in contemporary world politics.

There are increasing signs that the liberal international order created after 1945 risks collapse. While populism and nationalism are on the rise across the world, asserting the claims of particular peoples and emphasising their singularity and exclusivity, we are also more connected than ever before. These connections require global cooperation and careful management. And yet we are not rising to this challenge. A series of global collective action problems, from the spread of weapons of mass destruction to climate change, threaten to render our societies weaker, poorer, and more violent. There is a substantial risk that humankind may not end the twenty-first century as well as it began it.

This critical context emerges out of a specific set of historical processes and trends, most of which we would label 'progress'. In *Gridlock: Why Multilateralism Is Failing When We Need It Most*, published with David Held and Kevin Young in 2013, I sought to understand and explain the achievements and the limits of the postwar order. We concluded that deep structural trends, rooted in the extraordinary success of international cooperation and the transformations it allowed, now undermined its continued effectiveness and responsiveness. One of the central concepts developed in *Gridlock* was 'self-reinforcing interdependence' (Hale, Held, and Young 2013), the mutually enabling relationship between globalization and the institutionalization of world politics that profoundly deepened interdependence over the postwar period. The idea is that international cooperation is not just a response states use to manage existing interdependence; over time, cooperation also increases the links between economic and social systems across borders, deepening interdependence further. For example, trade agreements create incentives for companies to develop global supply chains and invest in technologies that facilitate cross-border production, changing their business models and building new constituencies for trade. The resulting increase in interdependence creates additional political incentives for countries to cooperate further, beginning the cycle again. We argued in *Gridlock* that this historical process of partially endogenous interdependence deepened to such a degree over the postwar period that a number of 'second order' cooperation problems arose – namely, multipolarity, harder problems, institutional inertia and fragmentation – causing gridlock. We set out a bleak picture of how gridlock paralyses multilateral governance, with dangerous implications.

But are we trapped by this kind of path-dependent, historical, structural logic? Or are there new possibilities and pathways

available to move global cooperation forward? For these kinds of prospective questions, social science, as it currently exists, is less helpful, for reasons I review below. But the answer is not, as many might argue, to conclude that studying the future is simply too difficult or too un-scientific to attempt. We, as social scientists, should not be satisfied with our current set of tools, but instead push for ways to expand them. Given that global cooperation requires managing long-term change, we have a professional duty as students of the social world to devise better tools to guide future-oriented policies.

The Scientific Process Looks Backward, But Must Scientists Also?

The scientific process is inherently retrospective. A hypothesis emerges from an existing body of theory, or in response to an unexplained empirical anomaly. The observable implications of the hypothesis are deduced, and then a set of empirical cases is examined, qualitatively or quantitatively or both, to determine if the hypothesized conditions and factors obtain. Should significant variation across cases remain unexplained, the theory and hypotheses will need to be improved, or potentially discarded in favour of better explanations.

Given this process, the most social scientists can say about the future is to say how future cases are likely to develop given what is known about similar cases in the past. Two complications immediately arise: the (dis)similarity of past cases and future cases and the intertwined dilemma of multi-causality (one outcome having several causes) and equifinality (various factors converging to the same outcome). In other area of scientific inquiry, these problems are less severe. Consider, for example, the effect of a virus on the human body. A certain kind of virus tends to have a very similar effect on all kinds of human bodies. Why every individual's case of course differs, for common viruses scientists are able to acquire sufficient data to relatively easily determine the range of possible effects and the conditions under which those effects vary (e.g. genetic predisposition or lifestyle characteristics). Similarly, they can also understand quite precisely how the virus will respond to certain kinds of treatments. Under these conditions, science is able to both predict the future (if you get this virus, you will have these outcomes) and to shape it (if you take these drugs, you can contain the problem).

Such conditions almost never obtain in the study of global cooperation. Cases of the phenomenon of interest (e.g. the negotiation of a multilateral climate treaty) are either few in number, or completely unique. Therefore the number of cases can typically only be expanded by retreating to a higher level of abstraction (e.g. the negotiation of multilateral

treaties generally)), which necessarily makes the resulting theories more general and renders their predictive power less precise. Compounding the difficulty, cases are often not independent of each other. The outcomes of the cases used to build a theory of a phenomenon may fundamentally alter the dynamics of future cases of that phenomenon. In such conditions, the causal factors of interests are often multiple, making it difficult to say exactly what is 'doing the work', or conjunctural, combining in specific ways to create complex, compound causal pathways.

Given these limits, the challenges of forward-looking social science are not to be underestimated. But this does not imply that they should not be tackled.

Tools for Studying the Future

Three families of tools for studying the future present themselves: extrapolating from current explanations, modelling, and scenario analysis. Consider each in turn.

Extrapolating from current explanations is the most comfortable future-oriented tool for social scientists. We are on solid scientific ground if we are able to say, 'under conditions A we got outcome B, so if we see A again, B is again a likely outcome.' For example, studies of US elections show that trends in economic conditions in the months before an election are strongly determinative of the outcome. So if we see negative trends, we should expect the incumbent to do poorly. This is useful knowledge, but it falls far short of the realm of prediction. Moreover, it will, by definition, fail to explain outlier cases, such as the US election in 2017. We should aspire to do better.

Modelling (by which I mean various mathematical approaches from various disciplines) takes essentially the same approach, but uses stronger and more precise starting assumptions to squeeze more predictive power out of existing explanations. This approach has the benefit of making the theory's assumptions transparent, and can lead to quite precise predictions. But the corresponding trade-off is the critical importance of getting the starting assumptions and explanations right in the first place. As noted above, social science is typically unlikely to have universally valid theories at a sufficient level of prediction to yield definitive results. That said, modelling can be extremely helpful for teasing out the logical consequences our dominant existing explanations. It is an under-used methodology in many branches of social science (such as political science), and so strikes me as an area for future growth in global cooperation research.

The final set of tools, which I will group under the category of scenario analysis, causes the most discomfort for social scientists.

These techniques are essentially ways to surface, structure, and tease out the implications of analysts' 'priors' (in the Bayesian sense) about future trajectories. While certain aspects of the scientific process may be employed, such as hypothesizing certain effects and positing outcomes from certain processes or sets of conditions, there is no way to test the prospective work empirically. Very few social scientists engage in such work, although there are perhaps certain parallels to scholars who devote themselves only to theory development (typically via formal mathematical models) in microeconomics or political science.

What Future for Future Studies in Social Science, and for Social Science in Future Studies?

In sum, there are ways for social scientists to look at the future, but these are typically not valued as core parts of disciplinary practice, nor are they valued in the currency of professional achievement. Given the vast challenges facing global cooperation in the coming decades, can we be satisfied with this situation? My sense is that we cannot be. If the purpose of science is to understand the world, why are we focused only on that part of social reality that where our analytic tools have greatest traction? Are we not like the man who, having lost his keys in the dark, searches for them under a streetlight – not because he lost them there, but because it is the only place he can see? As scientists, we cannot settle for this approach. If our tools find it difficult to peer into the future, we need better tools. Developing the three baskets of analytic techniques described above offers a way forward. We will never, of course, have as much ability to look forward as we do to look back, but we will have some. And as we confront urgent global challenges, even a bit more vision could make all the difference.

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**Narrating the Future:
Between Scientific
Scenarios and Political
Deliberation –
A Pragmatist Comment**
Michael Reder



Globalization is one of the most defining features of social and political life in our time. The proliferation of global actors and the dynamic relations between them are two main aspects of the processes of globalization as we currently know them (cf. Kumar and Messner 2010). Consequently, the globalized world is often interpreted as a network: everything seems connected to everything else. These connections (better: relations) between different actors, groups or intuitions beyond traditional borders influence social life today; they are also the starting point for various global developments in politics, economics and culture (cf. Rosenau 1999).

Against the backdrop of globalization, the world is facing immense challenges, politically, economically and ecologically. The impacts of climate change, the consequences of the financial crisis, and new forms of war and terror are three examples of these challenges. Two characteristics of these challenges seem most important: Firstly, these problems have an explicit global dimension and they can only be sufficiently understood within the context of complex, dynamic and interrelated processes of globalization. Decisions in one part of the world can imply a wide range of consequences in other parts and even lead to complex global problems. This is why academics as well as politicians and many other stakeholders think about *global* solutions for these problems. Secondly, many of these global problems have long-term consequences. The impacts of climate change are one obvious example, because economic and political decisions in the field of climate policy will influence future generations in various ways (cf. Edenhofer et al. 2012).

All the sciences help to reflect both the global and the long-term temporal dimension of today's problems. In order to discuss in what way they do so, it is necessary to think about the relation between scientific research and the social and political sphere. Often, science likes to think of research as independent from the social and political sphere. The assumption behind this self-understanding is that sciences follow a specific logic which differs from a political logic. Thus, scientists want to be independent from any other political actor, in order to define their research questions and the way of reflecting on them independently. Many academics are very sensitive to attempts to instrumentalize research. They argue that sciences should be free to produce 'independent knowledge'. Some even argue that scientists should not think about what knowledge is socially needed.

I suggest in this paper that such a self-understanding of science is misleading. Of course, scientific research should always be independent and also be sensitive to potential (political or economic) instrumentalization. Jacques Derrida

calls this a 'university without condition' (Derrida 2001). But Derrida also argues for a new understanding of the social embeddedness of scientific research. Because the sciences are part of the social and political sphere, they should always reflect their relation to these spheres. However, science – or the sciences – should not be reduced to knowledge ready to be exploited for political interests. Rather, sciences ought to remain, or even become, independent in order to be able to develop critical perspectives on social and political processes, also and especially in times of globalization.

If one of the most definitive features of social and political processes today are their global dimension and long-term consequences, the question arises in what way society should be developed and what the main problems of future societies are. Therefore, future narratives in general and modelling of future scenarios in particular become important academic and political tools to reflect social dynamics. Narratives are the broader concepts and reflect in which societies humans want to live in, normatively, politically, or economically. Scenarios develop different pathways for such a concept of future society and what this means for politics or economics. Such scenarios can help to analyze the various practical consequences of political decisions or economic dynamics. They can help to achieve a better understanding of the impacts of different social, cultural, and political pathways. Therefore, they provide an analysis of complex global related processes and their long-term consequences and how they influence each other.

Political Function of Scientific Research

Philosophically, such narratives and future scenarios imply some problems. First, I would like to mention a few inherent structural problems (a); in a second step, I will problematize the social function of such scenarios and reflect on the relation between future scenarios and the political sphere (b).

(a) First, future scenarios often suggest causal relations between different natural and social developments. If *a* happens, *b* will follow and imply *c* with a probability of *x* percent. Some models even try to quantify the consequences of different developments. This is the reason why (not all, but) many scenarios focus on economic costs of different pathways. Climate research is again a very good example of this. Since Nicholas Stern has shown which climate policies imply what costs (cf. Stern 2007), many other studies have conceptualized climate policy in the framework of economic costs.

While this way of arguing is important, especially for operationalizing different climate policy options, focusing

or even reducing the logic of scenarios to economic costs tends to fade out other social dimensions or actors. One argument might be that values, social actors or cultural dynamics cannot be translated into the logic of quantification. But without these, important aspects of reality get lost in the ensuing political discussion of the consequences of these future models. For example, the diversity of cultural actors worldwide and their social and moral background is of particular importance in the social and political sphere and also tends to be an important driving force within the climate and development arena. While cultural actors such as change agents cannot be quantified like living standards or growth rates and therefore economized easily, this is no reason to neglect them.

Religions as cultural actors might be a good example. From the point of view of a secular liberal paradigm, they do not seem to be as important as other actors. Nevertheless, they have much influence on climate pathways and therefore should not be excluded.

As social capital, moral background or cultural actor, religions play an important role in the public sphere' and are important levers. Therefore, religions should be integrated in modelling the future. 'Religions are of course, ambivalent phenomena. (...) This is no reason, however, to reduce them to the private sphere. Only if people adopt climate issues within their own cultural and religious practices, can political programs be effective. In this way, religions could provide an important impetus for change. (Reder and Müller 2012: 117)

The second critical aspect is the concept of time that is implied in these future models. Often a classical physical concept of time is implied, which interprets time as equal units, which again could be quantified and put into a causal relation. Such a concept of time neglects the plural structures of time and the different interpretations of time, which always exist in the social and political sphere (e.g. the difference between 'personal' and 'social' time or the different concepts of 'future' as framework of time). Future scenarios should reflect upon these various notions of time and thus should also integrate the pluralistic logics (e.g. cultural differences concerning the concept of time) which are embedded in these concepts.

(b) It is not only the inherent structure of future scenarios which might be problematic; also the social and political function of such models also has to be reflected on critically. Ottmar Edenhofer and Martin Kowarsch (2015a) have developed a helpful framework of three different scientific

models which refer to a distinction Jürgen Habermas made in the late 1960s (cf. Habermas 1987). When Habermas discusses the relation between scientific research and politics, he identifies three different types of this relation: a technocratic, a decisionist, and a pragmatic model. Drawing on Habermas and Edenhofer & Kowarsch, I want to make some comments on these models and discuss a few critical points.

The technocratic model applies wherever social and political decisions are quantified in future models. The central idea behind such scenarios is that the world is complex and we need to collect as much data as possible and try to form plausible models on that basis. In this technocratic model, the world seems to be much too complex for political decision makers. This is why natural sciences in particular develop quantifiable models to understand cause-and-effect chains. Sciences could (and should) identify the general aims of the respective scenario and also reflect the function of different instruments to reach those aims.

The technocratic model claims that researchers should address both policy objectives and means, because many policy problems are assumed to be too complex for policymakers. It is assumed that modern science and technology can resolve these problems without implying ethical judgments. The task of policymakers – aside from generic agenda-setting – is reduced to formal decision-making and the implementation of scientific proposals as laws. (Edenhofer and Kowarsch 2015b: 7)

The advantage of this model is that it results in a clear roadmap: Science delivers the analysis and politicians have to implement the results. Of course, the world is very complex and highly dynamic, but the relation between sciences and politics should not be conceptualized in such a linear sense. Given my initial remarks and my comments on the self-understanding of the sciences, this concept is insufficient. It neglects the dynamic interrelation between the social sphere and scientific research. From a philosophical point of view, it especially neglects the normative dimension both of research and political decisions and the interrelation between facts and values (cf. Reder 2012: 272). For example, sciences may well help us understand the ecological consequences of normative claims and also the normative implications of economic facts.

Within the framework of research operations that expand our power of technical control we can make no cogent statements about “value systems”, that is, about social needs and

objective states of consciousness, about the directions of emancipation and regression. Either there are still other forms of decision than the theoretical-technical for the rational clarification of practical issues that cannot be completely answered by technologies and strategies, or no reasons can be given for decisions in such issues. (Habermas 1987, 64)

Future narratives and the connected scenarios could not be separated from, nor subordinated to, the political sphere. They always also imply normative judgements, which should be discussed in a comprehensive way. Science is always value-laden, e.g. concepts of vulnerability of course imply values, which have to be reflected also in the social and political sphere (Edenhofer et al. 2012: 9–18).

Does this mean that only politicians (as representatives of the people) should decide political aims, and also narratives in general (including their normative dimensions)? Habermas calls this the decisionist model. According to this model, politics provides the objectives for future scenarios and researchers reflect only on concrete means and instruments which support these aims. Finally, politics tries to implement these means. However, this model, too, is problematic, because politicians are not able to understand all the long-term consequences of their decisions. Deciding on objectives should be informed by sciences and their future scenarios, because they could help to foster understanding of the different pathways decisions imply.

The third model is the pragmatist model, which I would like to argue for. This model is inspired by the philosophical theory of pragmatism, which was developed by authors such as William James, Charles S. Peirce and John Dewey. Below, I mostly take my inspiration from Dewey's pragmatism. In line with Hegel, Dewey interprets the world as a relational network of individual and collective actions in which experiences play a central role. He understands experience as an immediate stimulant. Simultaneously, each experience challenges human beings to provide a reaction. In gaining experiences, human beings recognize themselves as relational creatures and constantly expand their own individual experiences (cf. Reder 2015).

The difference between experience and rationality is that experiences open a 'direct approach' to human reality and to the starting point of action and motivation. Rationality only helps humans to deal with and use experiences in an intelligent way and, for example, explain their functions for processes of human self-determination. This emphasis on human experience pervades Dewey's entire philosophical work, and shapes his understanding of philosophy by stressing that a distinction should no longer be made between a thick

concept of reason and a subordinated sphere of experiences. Therefore, future scenarios always have to take experiences into account.

To understand how philosophical and political arguments originate from experience, a look at Dewey's concept of the production of knowledge might be helpful, because experience also plays an important role in this process. 'An ounce of experience is better than a ton of theory simply because it is only in experience that any theory has vital and verifiable significance. [...] A theory apart from an experience cannot be definitely grasped even as theory.' (Dewey 2005: 169) Knowledge, and this is also true of political knowledge, originates from the processing of experience. Therefore, the knowledge production must be thought of as a multistage process. In *The Theory of Inquiry*, Dewey (1986) identifies different stages of the inquiry of knowledge: identification of a situation which is experienced; reflecting this situation as a problematic situation; creating hypotheses on dealing with this situation on the basis of the intelligence of experiences; development of possible solutions; and finally the experimental evaluation for the purposes of proving the proposed solution.

What are the advantages of such an approach? Firstly, starting with experiences avoids scenarios being 'ideal' in the sense that they would identify clear and causal relations without integrating the complex effects on the people. Integrating all stakeholders with their objectives and preferences for different means avoids scenarios being exploited by political interests. This means that scenarios should always be understood as part of deliberative processes in which socio-cultural actors as well as politicians and researchers reflect on their hypotheses and evaluate the consequences of them again and again (cf. Kowarsch 2016). The aim is not one ideal scenario, but different scenarios which draw on experiences and are understood as part of an open-end deliberative process. Let me summarize this model with a quote from Habermas:

In the *pragmatistic model* the strict separation between the function of the expert and the politician is replaced by a critical interaction. This interaction not only strips the ideologically supported exercise of power of an unreliable basis of legitimation but makes it accessible *as a whole* to scientifically informed discussion, thereby substantially changing it. Despite the technocratic view, experts have not become sovereign over politicians subjected to the demands of the facts and left with a purely fictitious power of decision. Nor, despite the

implications of the decisionistic model, does the politician retain a preserve outside of the necessarily rationalized areas of practice in which practical problems are decided upon as ever by acts of the will. Rather, reciprocal communication seems possible and necessary, through which scientific experts advise the decision-makers and politicians consult scientists in accordance with practical needs. (Habermas 1987: 66f.)

Secondly, this approach also implies some important consequences for the concept of the 'political' itself. The political should be reduced neither to political institutions nor to technical explanations of social change, but should be understood as a dynamic and complex process of all people who are affected (cf. Reder 2016). Many, if not all, challenges that arise in the context of globalization are technological in nature. However, as Habermas argues, such challenges 'cannot be met with technology alone. It is rather a question of setting into motion a politically effective discussion that rationally brings the social potential constituted by technical knowledge and ability into a defined and controlled relation to our practical knowledge and will.' (Habermas 1987: 61) This is especially important both for global and long-term consequences of current challenges.

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Participatory Scenario Processes – A Tool for Mutually Shaping the Future and Social Learning

Stefan Lechtenböhmer

PROCESSES
MUTUALLY SHAPING
FUTURE * SOCIAL LEARNING

GLOBAL EMISSION

Introduction

Dealing with the consequences of climate change and making the necessary transition towards low GHG emission energy systems are complex challenges which require integrated long-term strategies and planning. Energy system scenarios can serve as tools for making the necessary changes visible, analyzing their interactions and describing possible pathways to such futures. However, to implement these kinds of scenarios, they need to be shared by many actors and result in practical action.

Participatory processes are often perceived to be a promising tool for improving the implementation of long-term visions as embedded, for example, in the scenarios. Although there seems to be no general proof that participatory processes are effective in achieving the targets assigned to them, the findings by Reed (2008) indicate that participation is an instrument to improve decision-making processes. 'Participation needs to be underpinned by a philosophy that emphasises empowerment, equity, trust and learning' (Reed 2008: 2417).

A participatory process may also lead to a better understanding of future developments, systemic interactions and targets by participating stakeholders because it enables them to learn about the instrument and the effects of certain assumptions. Finally, through this kind of learning and active involvement, it is hoped that stakeholders will support the targets as well as the associated measures and thus actively help to improve implementation.

In 2012, the German federal state of North-Rhine Westphalia (NRW) decided to establish its Climate Protection Plan in a participatory process with a large number of stakeholders from all sectors of society.

The design of the process was developed by the Wuppertal Institute (Zeiss 2012) on behalf of the State Environment Ministry as described, for example, in Lechtenböhmer et al. (2016). The present article hints at some of the difficulties associated with one of the core instruments of the process, the participatory development of GHG mitigation scenarios, focusing particularly on the discussions with industry stakeholders who formed one of six working groups (cf. Lechtenböhmer et al. 2015).

Example: The Stakeholder-Based Climate Protection Plan Process in NRW

North-Rhine Westphalia is home to one of the most important industrial regions in Europe, and is the first German state to have adopted its own Climate Protection Law, which obliges

the state to reduce its greenhouse gas (GHG) emissions by at least 25 % by 2020 and by at least 80 % by 2050 compared to 1990 levels. North-Rhine Westphalia is responsible for about a third of German GHG emissions or about 7 % of the EU's GHG emissions. The state thus has a key role to play in meeting national and European climate targets.

The Climate Protection Law introduced in 2012 mandated the participatory development of a Climate Protection Plan (CPP) to break down the state-wide reduction targets into sectors and timeframes (Landtag Nordrhein-Westfalen 2013). Comprehensive participation of state-wide actor groups in the development of the CPP is central to NRW's climate protection efforts (Fischedick et al. 2015; Vallentin et al. 2016). Actors from all societal groups, including state and municipal administrations, were involved over 2013 and 2014 in six working groups representing the main GHG emitting sectors. Their task was to develop climate protection strategies and measures and to identify sectoral potential for climate protection via scenario development (Lechtenböhmer et al. 2015; Fischedick et al. 2015; MKULNV NRW 2014).

Important targets of the process were to integrate expert know-how, to maximize transparency, to increase acceptance and public engagement, to create an appropriate implementation culture and establish new cooperation schemes for this purpose, and to initiate joint approaches between actors, science and government.

The participants from the industry sector included about 40 representatives of 16 stakeholder groups (see Lechtenböhmer et al. 2015). They were invited based on prior stakeholder mapping carried out by the Wuppertal Institute for NRW's Ministry of Environment. The target was to have a broad representation of the main industries as well as other relevant stakeholders from all societal groups. The majority of the stakeholder representatives came from firms in the energy-intensive industrial sub-sectors, together with representatives from industry associations, trade unions, chambers of commerce, environmental and consumer organizations, associations of municipalities, academia and others.

The group sessions were prepared by WI scientists but moderated by experts from a consulting firm. Researchers supported the refining of stakeholder proposals for input into the model and helped to feed model outputs back into the discussion.

The Scenario Set-up

The scenarios for NRW consisted of sub-scenarios for each of the six sectors that were modelled, which made cross-sector adaptation of the scenarios necessary as sector participants

independently designed their scenarios. The overall result was meant to be as consistent as possible, however.

For the scenario generation, the WISEE NRW Energy System Simulation Model was used. This is a bottom-up simulation model with a very detailed representation of energy system technologies and a low degree of endogenization, i.e. many parameters can be changed by bringing in stakeholders' knowledge. Its focus lies on unveiling existing energy efficiency and GHG mitigation potential rather than finding the optimal pathway to achieve a given target (cf. Herbst et al. 2012; Hourcade et al. 2006).

Figure 1 gives an overview of the model architecture with a focus on the industry sector. Except for the power plant sector, the model does not represent economic variables. NRW's energy demand sectors – including industry – are covered in detail, whereas the rest of Germany is represented on a more aggregate level, with the exception of power plants, which are modelled in high resolution for the whole of Germany.

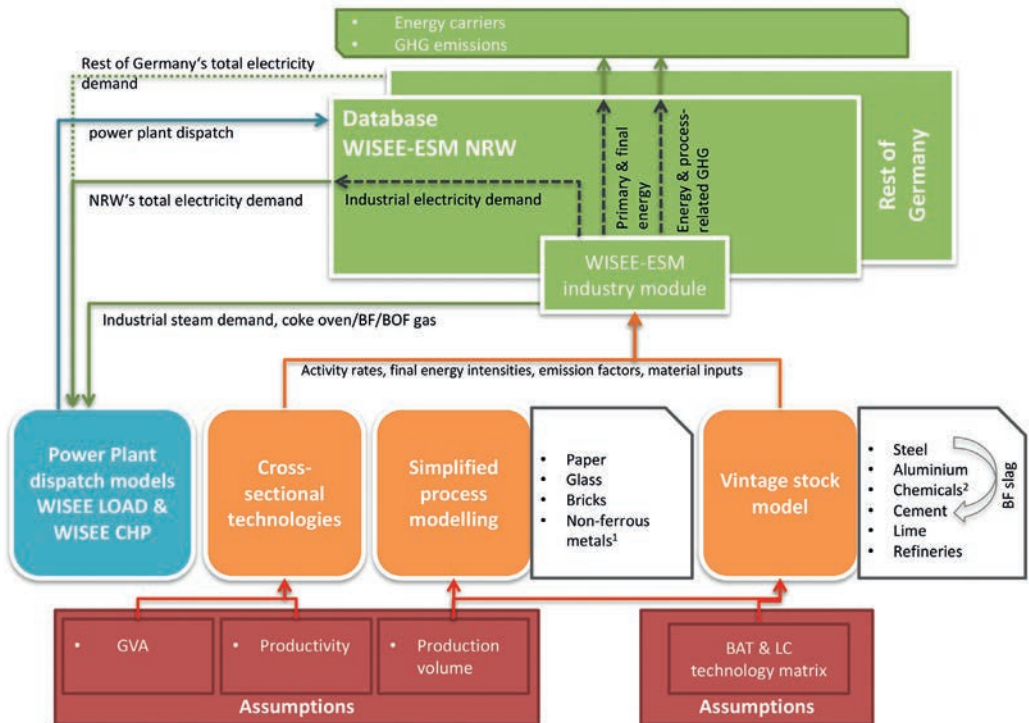


Figure 1: Overview of the WISEE NRW model system (industry focus)
Source: Lechtenböhmer et al. 2015. Abbreviations: BF – Blast Furnace; BOF – Basic Oxygen Furnace; BAT – Best Available Technology; LC – Low-Carbon Technologies. Notes: 1 other than aluminium; 2 selected base chemicals (ethylene, ammonia, etc.).

In the 'Industry' module, more than 20 energy-intensive industrial production processes are described, with all relevant input and output flows, together with various future technology options. On this basis, WISEE calculates energy demand by multiplying an activity value (e.g. steel production or gross value added (GVA) of an industry) with an energy intensity value. Energy-related emissions are calculated by multiplying energy demand by the emission factor of the respective energy carrier. Process-related emissions are calculated on the basis of activity rates (e.g. anode use in the aluminium industry or lime use in steel production) and technology-specific emission factors.

The time series of energy intensities for production processes are determined for every sector-specific technology (e.g. electric arc furnace, blast oxygen furnace, steam cracking) and for cross-cutting technologies (e.g. motors, lighting) in their respective modules. To do this, vintage stock models for all major plants in steel, aluminium, cement and ethylene production were used.

A technology matrix provided base assumptions for the specifications of new investments or replacements (lifetime, efficiency, energy carriers) and their availability dates (see Lechtenböhmer et al. 2015). Stakeholders actively helped to construct the assumptions on best available technologies (BAT), i.e. technologically proven and economically viable options. Low-carbon (LC) technologies were chosen by the authors based on the literature, and were validated by the stakeholders, although at times were considered too ambitious.

Electricity supply was simulated in detailed power plant dispatch models. Using an hourly breakdown of electricity demand, these models simulate the changing electricity supply for Germany until 2050.

The Process with Industry Stakeholders

The aim of the work with industry stakeholders was to formulate the industry sector's emission reduction scenarios and long-term strategies for the Climate Protection Plan and to validate the core assumptions. To do this, five stakeholder workshops lasting one day each were held between September 2012 and November 2013. The aim of each workshop was to discuss and refine the inputs prepared by the Wuppertal Institute using the (WISEE) NRW energy system model. A sixth workshop was held at the end of the period to finalize the process and fix results in a joint decision.

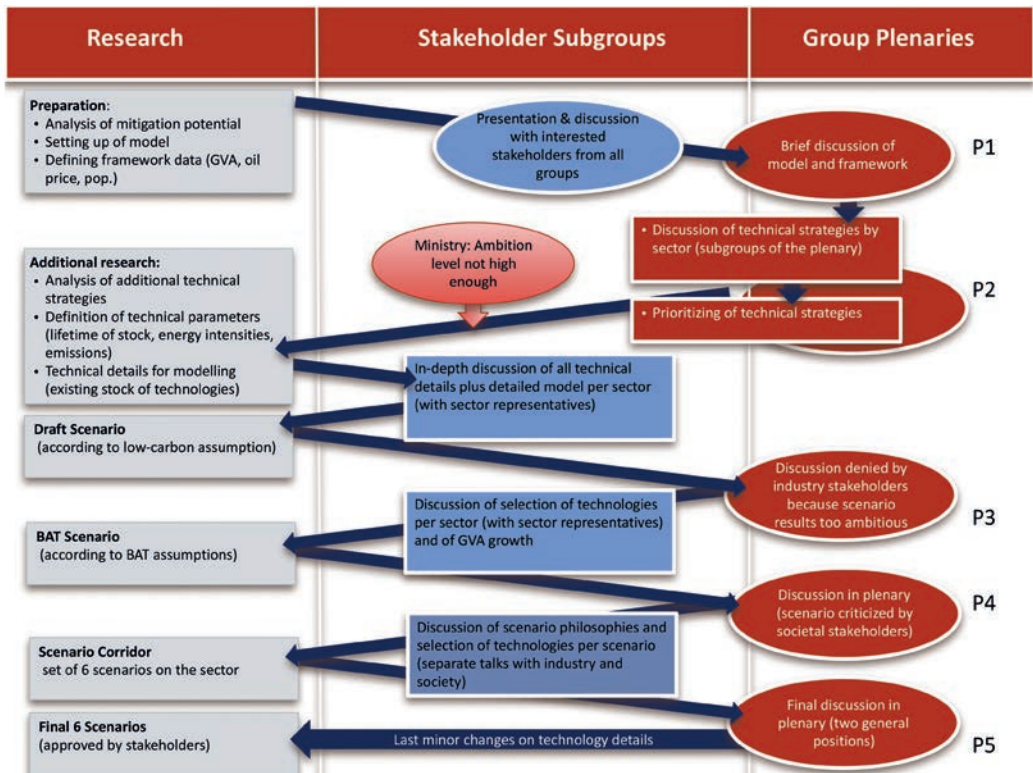


Figure 2: Overview of the process of scenario definition with industry stakeholders

In the *first plenary workshop (P1)*, the model framework and starting assumptions were presented, based on the existing model and some preliminary work on mitigation potential and framework data. It should be noted here that all framework assumptions (e.g. energy and CO₂ prices, population and GDP growth, and sectoral value added) were provided to the participants in advance in the form of detailed Excel tables. However, at this stage little feedback was received and stakeholders did not react to the assumptions so far. This happened later, after the first scenario results had been presented (see P3). Furthermore, before the discussion with the full group, a dedicated workshop with energy modelling experts (e.g. from energy companies) had been organized in order to approve and validate the overall model that was used.

In a *second plenary workshop (P2)*, the available technology options for emission reductions were discussed in subgroups for each industrial branch and were prioritized by the stakeholders. However, experts from companies and trade associations dominated the discussions due to their deeper and more sector-specific knowledge of processes and technologies.

Based on the selection and prioritization process, a scenario was designed by the scientists; however, it very much followed 'business as usual' lines and was thus rejected by the Ministry. As a consequence, the researchers identified further mitigation technologies from literature analysis and discussed them sector by sector with stakeholders from the respective industries or companies. These sectoral background workshops helped to define technical parameters (lifetimes, energy and emission intensities, stocks) of the technology options and to discuss the details of the models with the stakeholders.

In the *third plenary (P3)*, a draft scenario with low carbon assumptions was presented but not discussed. As a result, after the plenary, intensive and detailed discussions on basic assumptions, such as prospects of future industrial production, were conducted with representatives of the energy-intensive industries.

Representatives of several sectors questioned growth assumptions (they had not objected at the beginning of the process) and insisted on using higher industrial growth assumptions. Due to this discussion, three industrial growth scenarios were developed. The moderate scenario with an assumed average industry growth of 0.6 % per year in NRW between 2010 and 2050 represented the original assumptions that had been derived from recent energy projections at the national level (BMW and BMU 2010), while the intermediate and high scenarios were based on a study on behalf of the German chemical industry (VCI and Prognos 2013) plus assumptions by industry representatives on their specific sectors' growth expectations. This study only provided projections to 2030, so for the period to 2050, the high growth assumption by VCI and Prognos was used for the high scenario, whereas for lower growth, the BMW and BMU assumption was used, resulting in average growth rates of 1.6 % and 1.2 % per year respectively.

In a *fourth plenary (P4)*, a draft best available technology (BAT) scenario and a low-carbon (LC) scenario featuring more ambitious assumptions – such as the development of a hydrogen infrastructure for NRW – were presented, both incorporating stakeholder-validated assumptions. The workshop itself was quite controversial, with industry representatives favouring high growth and conservative technology assumptions and environmental NGOs the opposite. After the plenary, six scenarios were defined that comprised three alternatives on industrial production growth (moderate, intermediate, high) and two alternatives on technology (BAT and LC).

In the *fifth plenary workshop (P5)*, the results of the scenarios and the necessary policies and measures were discussed. At the end, no general agreement on the scenarios was reached.

Both 'groups' stated their respective views on the scenarios in the final report, which also provided an overview of all the results.

Conclusions

It can be concluded that core targets of the joint scenario building process which were more on the qualitative level of creating mutual understanding among different groups have been achieved. The knowledge base among stakeholders in the field of low-carbon innovations was improved and there was a high degree of commitment in discussing and elaborating proposals for industry-specific innovation agendas. Furthermore, in spite of the controversial topics dealt with, a highly productive discussion culture was achieved. This helped to build trust among stakeholders, including several groups that did not cooperate intensively before. Awareness of the different perspectives among the stakeholders was also created.

However, several challenges for regional innovation strategies were encountered at the same time. The long-term perspective (e.g. until 2050) of the scenarios was often difficult to discuss and implement due to the shorter medium-term focus of company R&D and industry strategies. Moreover, the established industries typically benefit from their existing assets, which have been developed over decades and therefore make it more difficult to exploit more radical innovations (cf. Wesseling et al. 2017). Nevertheless, stakeholders agreed that sector-oriented university research should be strengthened once more, as it had been a motor for innovation in the past but had partly been lost, at least for the smaller sectors.

In addition, many low-carbon innovations seem to be too large in scale to be pushed forward regionally, a) given the limited resources of the state government and b) sectors' innovation systems are very often cross-border, not only with other states but also internationally. This is emphasized by the economic and technical structures of energy-intensive processing industries in NRW, which also limit regional options to increase innovation potential. The cement, glass and paper industries mainly consist of SMEs partly owned by foreign multinationals.

Finally, quite interesting innovations seem to exist in industrial symbiosis across traditional company and sector boundaries. In order to identify and exploit them, however, a regional cluster of various industries could be an important asset.

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Part II

Imagining Global Futures

A cartoon illustration serves as the background. At the top, a speech bubble contains the text 'KEEP THE IDENTITY'. To its right, a small figure is labeled 'ALIENS'. The central part of the image shows a large, tilted, orange and white structure, possibly a ship or a piece of machinery, with several small circles on its side. Below this, a large, jagged, blue and white shape represents a glacier or ice formation. At the bottom, the words 'CLIMATE CHANGE' are written in large, bold, blue letters. The overall style is hand-drawn and expressive.

The UN Sustainability Agenda: Helping to Face or to Elude Common Global Challenges?

Lothar Brock

The Ambivalence of Conference Diplomacy as an Exercise in Global Cooperation

The idea of global cooperation gained unprecedented momentum after the end of the Cold War and in the context of a new wave of globalization. The numerous World Conferences held in the early and mid-1990s even seemed to signal a fundamental shift of world politics from confrontation to cooperation as envisioned in the Paris Charter of 1990, the UN General Secretariat's Agendas for Peace, Democracy and Development and the UN Report on Global Governance (Commission on Global Governance 1995). We know by now that the shift from confrontation to cooperation was more imagined than real. What we are confronted with today is not the decay of a post-Cold War cooperative world order but the limitations of global cooperation in the world order which emerged after the breakdown of the Soviet Union.

When the World Conferences of the 1990s were convened, it quickly became clear that single conferences (no matter how comprehensive and ambitious they were) could not be expected to solve the problems they were to take on. Rather, the conferences as *events* were to be seen as starting points of open-ended *processes* of multilateral consensus formation and negotiation.¹ This was a marvellous solution to the task of upholding a multilateral approach to global challenges in spite of its meagre immediate effects on the substantive issues. But it also raised the question as to what extent multilateral deliberations and negotiations serve as steps towards the institutionalization and habitualization of global cooperation or merely help to gloss over the harsh realities of global inter-state competition for power and resources.

In the issue area of sustainability and climate change, after many crises and near-breakdowns, conference diplomacy has led to much hailed results – most recently the adoption of the Sustainable Development Goals (September 2015) and the Paris Agreement (December 2015). However, following the by now established patterns, the meaning of these agreements for the issues dealt with depends on the follow-up. And this follow-up, thus far, has not been very promising. On the contrary, while the US Administration withdrew from the Paris Agreement on climate change in blunt disregard of what the Obama administration had signed up to, countries' individual commitments (which are up for periodic review) fall far behind what would be necessary to reach the overall goal of keeping climate change 'well below' 2° Celsius compared to pre-industrial temperature levels. As things look right now, this goal is out of reach in spite of the fact that greenhouse gas emissions have plateaued over the past three years.

So does environmental conference diplomacy produce nothing but waste paper? Obviously, global cooperation

¹ For a regime-theoretical differentiation of the roles of international institutions (regulatory, procedural, programmatic, generation of norms) see Young 1999.

not only involves good will and determination to serve the common good, but is also inextricably linked to particularistic interests that come to bear in the initiation and practice of cooperation. Thus it is by no means clear that cooperation as such will serve the purpose we attach to it when we juxtapose it with confrontation (Brock 2016: 67). Offering an alternative to confrontation is only one aspect of cooperation. The other is that it functions as a strategy for the enhancement of particularistic interests, especially by cutting costs and helping to legitimate the pursuit of these interests. From this perspective, talks on climate change might lead the public to believe that things are moving in the right direction when they are not. Such talks may also elicit expectations which are difficult to meet. The resulting frustration may foster an anti-universalistic backlash as we experience it today. In sum, global cooperation is not only about living up to common global challenges; it is also about hypocrisy, deceit, cheating, or free riding (or all of these).

This ambivalence of the ongoing conference diplomacy is clearly visible in the history of the UN's sustainability agenda. In this article, I address this history up to the SDG agenda and the Paris Agreement in order to draw some conclusions on what to expect in the future. To that end, I will also refer to some of the theoretical issues involved.

The Beginning: Protecting Natural Resources and Sidetracking the New Economic World Order

The (first) UN Conference on the Human Environment (Stockholm 1972) added the protection of natural resources to the agenda for solving 'world problems' such as security and development. This agenda transcended the Cold War constellation and as such interacted positively with the East-West détente of the early 1970s. It was accompanied by a 'great debate' on the limits to growth, unleashed by the Club of Rome (Meadows et al. 1972).

The protection of the human environment and raising awareness of the limits to economic growth were claimed by its adherents to be in the interest of every society and every human being. Nevertheless, they led to serious controversies. The then so-called Third World suspected that the whole debate served the purpose of sidetracking its own agenda: i.e. the shaping of a New Economic World Order which would not only help to secure natural resources for global development but would redistribute the benefits accruing from the use of these resources. The Indian delegation to the UN conference in Stockholm famously stated that smoking chimneys were only a problem for the rich countries whereas for the poor they were a sign of hope.

While the Indian delegation clearly had a point, the 'sign of hope' also stood for dramatically growing environmental problems in the form of pollution, soil erosion, the destruction of the ozone layer, new health hazards etc. The response of the United Nations to the North-South dispute was to try to reconcile the issues of development and environmental protection. The conceptual frame for doing this was elaborated by the Brundtland Commission on Environment and Development. The Commission focused on *sustainability*, understood as improving the well-being of all without compromising the life chances of future generations (World Commission 1987). Since securing the well-being of all was regarded as depending on development, it followed that there can be no environmental protection without development and no development without environmental protection.

The ensuing normative nexus between development and safeguarding natural resources under the term of sustainability proved to be quite strong. Not in spite of, but perhaps because of its abstractness, the notion of sustainability inspired generations of scholars, civil society groups and politicians by allowing them to refer to the need for change (even radical change) without fostering immediate dissent on what that stood and called for. It also carried forward the emotional appeal of the Brandt Report, which had argued that South and North could only survive together (Brandt Report 1980).

The Brundtland Report thus helped to diffuse the ideological cleavages dominating the East-West and North-South constellations by focusing on sustainability as a bi-partisan standard of adequacy in international relations. It redefined the ongoing struggles over justice, access and participation in terms of a universal common good around which the conflicting parties could re-invent themselves as part of an international community with a (however rudimentary) global we-identity.² However, while this approach helped to develop a new conceptual focus on the need for and possibility of global cooperation, it also tended to gloss over existing cleavages in world society. This came to bear in the new millennium when the troubles of the old divisions proved to be more persistent than most people anticipated in the early 1990s.

² On the possibility of a global we-identity cf. Grimalda 2016.

From Rio to Paris: Rising Ambitions, Faltering Confidence

The end of the Cold War offered a singular opportunity to overcome both the East-West and the North-South divide in world politics through the institutionalization of collective problem-solving. As mentioned above, this opportunity was seized by the emerging 'international community' in the form of a multitude of World Conferences which were built on the

premise that globalization called for global governance, i.e. governing the world without world government (Rosenau and Czempiel 1992).

Global governance as a concept calls for an expansion of international institutional capacities for cooperation without leading to a state-like centralization of political competence and power. The World Conferences launched after the end of the Cold War met this task by transforming themselves from singular events into open-ended processes of multilateral deliberations and negotiations. This was not really new.³ But it became much more important than before for shaping the normative frame of reference in which international relations were to unfold. As a consequence, multilateral conference diplomacy within the UN system and at the regional level developed into a standard practice for dealing with issues of international concern.⁴ In this context, civil society played an expanding role as part of the respective inter-state deliberations and negotiations and, equally if not more important, by organizing their critics.

In the issue area of sustainability, the Rio Conference of 1992 set in motion a process of deliberations which contributed considerably to our understanding of what is at stake when we talk about sustainability, what can be done to enhance it, how this can be done and who should be doing it. It took up the basic understanding of sustainability as spelled out in the Brundtland Report by linking environmental and developmental concerns. But it specified the political implications arising from this linkage in the form of 'the common but differentiated responsibilities' (CBDR) of all countries for coping with the need for sustainability. This formula anticipated a growing share of the Global South, particularly of the newly emerging countries, in the global emission of greenhouse gases, but it also acknowledged the historic responsibility of the Global West for environmental depletion and climate change. It recognised, too, the uneven capabilities of the various groups of countries to contribute to the mitigation of, and adaptation to, global warming, thus confirming the necessity of increased and more focused material assistance from the established countries for the less capable ones. This was a historic achievement which paid tribute to the possibility of global cooperation even in an extremely heterogeneous setting.

On the other hand, the compromise on the issue of responsibility came about in a situation in which the liberal democracies considered themselves to be the winners in the preceding struggle between East and West. Accordingly, the compromise on who was responsible for doing what, while constituting a step towards global justice, was also in line with the ambition of the liberal democracies to universalize *their* norms and values in a post-socialist and post-colonial world.

³ See the earlier debates on international regimes (Young 1982).

⁴ For a historical perspective on this cf. Neumann 2016.

This state of affairs met with growing discontent, if not resistance, on the part of the Global South (Ziai 2015).

In general, progress in dealing with issues of sustainability (with the exception of the Montreal Protocol) was rather slow and the much hailed Kyoto Protocol lost a lot of its appeal as an instrument for combating climate change when the US, under the Bush administration, left it in 2001. Also, the developmental part of sustainability did not unfold in the way it should have according to the ongoing sustainability discourse. Thus a second big effort was made to link developmental and environmental issues (including climate change) when Kofi Annan launched the Millennium Development Goals (MDGs) in 2000.

The MDGs had a time horizon of fifteen years. A review after the first ten years offered evidence of some progress according to MDG criteria, especially with regard to the more traditional goals of development cooperation (reducing poverty, improving education and health services). This encouraged the international community to embark on a more ambitious post-2015 agenda which was adopted by the UN General Assembly in September 2015. Three months later, the climate negotiations were finally concluded in the form of the Paris Agreement.

The SDG agenda followed up on the approach underlying the MDGs by providing concrete criteria for measuring progress in the mitigation of social inequities and environmental stress. These criteria were set up in the form of seventeen Sustainable Development Goals. The seventeen goals include the eradication of absolute poverty, the reduction of social inequalities at the national and the international levels, the mitigation of climate change and the strengthening of governmental capacities to provide for peace, justice and effective governance. The SDGs allude to the need for change not only in the Global South but also in the well-advanced Global North. This orientation recognizes that modernization does not stand for linear and smooth progress, but rather goes along with depletion, social cleavages, unrest and collective violence. Thus, in spite of the factual heterogeneity of world society, the Global North is as much an addressee of the SDG criteria as the Global South is.

In this respect, the Paris Agreement fits well with the SDG agenda as it too addresses all states and provides concrete criteria for measuring progress towards achieving the overall goal of keeping global warming 'well under 2 degrees' Celsius in comparison to pre-industrial levels. Each country is called upon to commit to a plan of action for contributing its share to the mitigation of climate change. These commitments and their implementation are subject to a review every five years. The idea behind this procedure is to institutionalize a process of continuous adjustment of national policies to the actual

requirements of mitigating climate change. This includes the improvement of the 'resilience' of societies in the context of climate change. An essential part of the commitment of the fully industrialized countries is to provide the necessary funds for enabling needy countries to live up to their commitments, to improve their resilience, and to compensate them for damage which they suffer due to climate change. The emerging countries are to join this financing scheme in the mid-2020s.

At the first follow-up conference to the Paris Agreement (Marrakesh 2016), the procedure established in Paris was basically confirmed. Most countries did present plans of action operationalizing their specific commitments. Nevertheless, it was quite clear that the existing pledges would not suffice to reach the 2 degree goal. What made things worse was that even the self-styled climate avant-garde was falling behind its own schedule. Thus, greenhouse gas emissions in Germany, instead of going down as they should, are going up. Part of the problem is the continuation of open-pit coal mining and the refusal of the German government to go along with stricter EU controls of the auto industry. All other countries have similar conflicts of interests in which the dynamics of tactical manoeuvring at the domestic level may outpace the ability to mobilize public support for a conclusive commitment to cooperation at the global level.

Oscillating Contours of Global Cooperation

Cooperation in Conflict

The negotiations leading to the SDGs and the Paris Agreement were arduous and long drawn out. For many observers, it amounted almost to a miracle that the agreements were reached at all. This goes especially for the Paris Agreement. From this perspective, the adoption of the SDG agenda and the Paris Agreement offer a hopeful sign that all is not lost in the pursuit of a cooperative world order. But global consensus formation (at least as an emphatic enterprise) is more difficult today than it was in the 1990s and confidence that crucial problems can be solved through ever more systematic and comprehensive international cooperation seems to be fading.

Rather, coming together and moving apart have to be seen as interacting in a dialectical manner which responds to the very ambivalence of cooperation mentioned above. In general, cooperation is deeply intertwined with conflict. 'Cooperation functions as an important way of dealing with conflict and conflict is a major driver of cooperation' (Brock 2016: 67). The most common example of this relationship is cooperation as a means of enhancing one's capability to pursue particular interests in dealing with third parties.

This kind of partisan or 'antagonistic' cooperation (Brock 2016: 69) comes in many forms and shapes, from military alliances to clubs and patronage networks, all of which are inclusionary and exclusionary at the same time. In fact, the modern nation-state is built on the co-constitution of belonging and not-belonging. The downside to this state of affairs is that it produces constant conflict about who belongs and who does not. The good side is that the co-constitution of inclusion and exclusion as such is an expression of challenges (security, well-being, agreeable climate) which all parties are facing and in principle call for cooperation across dividing lines.

Global Public Goods, Fairness and Contestation

Such challenges may be defined in terms of global public goods 'with benefits that extend to all countries, people and generations' (Kaul et al. 2003: 23) and corresponding public bads under which everybody suffers (though in very different ways due to the existing disparities in power and wealth). The problem is that the maintenance of public goods and the avoidance of public bads generate costs. Since public goods are non-exclusionary, the maintenance of public goods (and the avoidance of public bads) causes constant quarrels about who is to bear the respective costs (problem of free riding). So there has to be some understanding of fairness or justice (or justice as fairness) deriving from the fact that the maintenance of public goods and the avoidance or mitigation of public bads constitute a global challenge (Albin 2003).

As pointed out above, a rudimentary notion of fairness was achieved in the UN debates on global sustainability under the formula of 'common but differentiated responsibilities' as established in the 1992 United Nations Framework Convention on Climate Change (UNFCCC). The common but differentiated responsibilities of the participating states are to come to bear 'in accordance with their ... respective capabilities and their social and economic conditions'. The acceptance of this formula was and is of crucial importance for making any headway in coping with the substantive issues (poverty, social inequality, global warming, etc.). What this formula meant in practice was always contested. The same goes for its practical implications for who is paying or contributing how much in which way. But the principle as such was maintained all the way from Rio to Paris. Is this now changing?

The US in particular has always been sceptical of the formula, arguing that it could serve as an excuse for the Global South to do nothing while asking for more money. But only with the advent of the Trump administration did these reservations turn into a flat rejection of the very idea that the US should be responsible for contributing to global sustainability.

Against the background of the traditional US opposition to global commitments, which it fears will curtail its own freedom of action, and in view of the fact that the US once before withdrew from a cooperative endeavour to mitigate climate change by leaving the Kyoto Protocol in 2001, the Trump administration's withdrawal from the Paris Agreement may not have come as such a big surprise. However, in view of the fact that deliberations and negotiations on sustainability have gone on in intense form for three decades, producing a considerable output of agreements, conventions and plans of action, two questions come up: (1) Why are so much time and money being invested in multilateral consensus formation in the first place? (2) Why do the results seem to mean so little when it comes to translating multilateral agreements into state commitment and action?

As to the first question, conference diplomacy has become more and more sophisticated, costly and productive (in terms of sheer paper output) during the past decades. If we look back a little further, this may be regarded as following a historical trend emanating from the Congress of Vienna of 1815 and the Hague Peace Conferences, and materializing in ever more extensive multilateral agendas, first under the League of Nations, and finally within the UN system. With a view to this development, a *Realist* answer to the first question would be, of course, that the entire story is all about mobilizing support and cutting transaction costs in the pursuit of each country's national interests under the condition of inter-state anarchy. But why, then, should extensive conference diplomacy be accepted as an adequate way of advancing the national interest in the first place?

A different approach to the first question centres around the issue of communication as a factor influencing political perception and preferences in dealing with controversies. In International Relations (as an academic field), basically two approaches have developed since the early 1990s around this issue: socialization theory and research on the emergence and contestation of normative orders. Socialization theory looks at how participation in international communication changes the perception of issues and the patterns of responding to them. The patterns of response can be described in terms of rhetorical action which (as the *Realists* would put it) aims to maximize resources and cut transaction costs. But different from the *Realists' approach*, it is the process of communication and not the anarchical structure of the international system which shapes behaviour (Schimmelpfennig 2001).⁵ So socialization theory is able to acknowledge the broadening and deepening of multilateral deliberations and negotiations by referring to the socializing effects of communication.

As to the second school of thought (research on norms) which has profited considerably from Habermas' theory of

⁵ See also the regime-theoretical pioneer work on these issues (Young 1999; Young and Levy 1999).

deliberation, the idea is to move from 'rhetorical action' to 'communicative action', i.e. from bargaining to arguing (Müller 2004; Risse 2000). The concept of arguing opens up the spectrum of possible change in international relations even further than socialization theory does. Whereas socialization theory sticks (mostly) to processes of homogenization, deliberation theory (as understood and applied in research on norms) focuses on the interplay between the promotion of norms, institution-building and contestation. This interplay is seen as a way of changing normative orders which are understood as frames of reference for defining interests and legitimizing political action (Deitelhoff 2009; Wiener 2014).

What does all of this mean with regard to the present state and future prospects of global cooperation for sustainability?

Conclusion: Facing *and* Eluding Global Challenges in Theory *and* Practice

Apart from *Realism*, the theoretical considerations above convey the message that there is more to the politics of sustainability than the production of waste paper. The approach via the concept of 'global public goods' confirms the reality of such goods, but also points out the structural difficulties of providing for them (free riding). From this viewpoint, it would follow that 'managing globalization' is becoming more difficult as the global power constellation shifts. The 'communicative turn' in International Relations, for its part, points to the socialization effects of international *bargaining* (following a logic of consequences) or to the importance of *arguing* as a way of self-binding of actors (following a logic of adequacy). From both viewpoints (which seem to be merging), the UN sustainability negotiations can be addressed as the emergence of a normative order which slowly gains in importance as a frame of reference for national policies and politics. 'Donald Trump' (as an argumentative figure) does not upset this theoretical apple cart, but rather can be viewed as an expression of the ambivalence of *contestation* as strengthening and obstructing normative orders. The US administration seems to be in the process of obstructing the emerging normative order of sustainability but up to now it has not stepped out of this order altogether. Rather, it has called for a re-negotiation of the Paris Agreement, which would certainly water down the agreement, but also could be regarded as confirming the need to continue with some form of global climate policy.

On the other hand, a mere 'we keep going' would certainly not make much sense with regard to making headway on the substantive issues. At best, it would keep up a fragile balance between facing and eluding global challenges; at worst,

it would lead to disaster (which not even the richest part of world society could reasonably hope to survive). Theory does not have much to offer to go beyond this spectrum. It has a hard time catching up with the events. International relations theory tries to do so inter alia by paying more attention than heretofore to the emotional side of world politics (Mercer 2010) and also by reaching out for more interdisciplinary work, especially in the field of evolutionary biology, anthropology or economics.⁶ Whether this will lead to an entirely new focus on the way global challenges are being faced (Müller 2017: 186) is doubtful. But I agree with Harald Müller that this interdisciplinary work would be underrated if 'sold' as just another 'turn' in International Relations. We should stop turning (round and round) and instead try to combine research on dissidence and resistance (Daase and Deitelhoff 2015) on the one hand, and on political authority beyond the state (Zürn 2015) on the other in a new (also old) approach to the analysis of international relations as a system of rule. This would open up a new critical perspective on the SDG agenda and the climate regime as parts of this system. Perhaps we could then turn from deploring the growing difficulties of managing globalization to taking a closer look at the chances which the global power shift may offer for working towards a more cooperative world order than the one that emerged after the end of the Cold War.

⁷ See the contributions in Messner and Weinlich (2016).

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Sustainable Development Goals and Common Global Challenges

Bettina Mahlert



The Sustainable Development Goals (SDGs) depart from their predecessor, the Millennium Development Goals (MDGs), in several respects. While the MDGs focused on classic Third World issues, the SDGs present a more aspirational agenda that addresses all countries – demanding, for example, not only to ‘achieve universal primary education’ (MDG 2) but to ‘ensure inclusive and equitable quality education and promote lifelong learning opportunities for all’ (SDG 4). The SDGs systematically address inequalities, which the MDGs did not, and they incorporate demands for environmental sustainability (Freistein and Mahler 2016). In order to relate the SDGs to the overarching theme of the Masterclass, the kick-off presentation focused on their sustainability dimension. Its main argument was that by framing sustainability in a rather idealizing, rosy and overly optimistic manner, the SDGs might not be able to motivate the necessary transformational steps for achieving the sustainability goals. This lesson, at least, could be learnt from classic scenario analyses.

Threats and Promises: Different Ways of Envisioning the Future

In international development, the future has traditionally been framed in terms of opportunities for further progress. In the post-war years, these were opportunities for catch-up modernization of the newly independent nation states in the global South. In the 1970s, the prospect of the future was to achieve universal basic needs satisfaction, which would considerably improve the situation of the world’s poorest. In the 1990s, the UNDP’s human development concept envisioned a stepwise expansion of people’s choices. Thus, while concepts and goals have varied in time and between different parts of the international development community, all framed the future in terms of progress: Improvements in comparison to the present situation are typically envisioned. Environmental discourses, in contrast, frame the future in terms of potential deterioration, degradation and risk. They embody the prospect of ecological disaster, of natural resource exhaustion, water-related conflicts, degraded soil, floods and droughts (cf. Horn 2014). In these discourses, the order of the day is to avoid disaster, but not to achieve improvements in comparison to the present.

While envisioning threats has not (yet) become a mainstream way of addressing the future in the field of development, in the scenario literature, the prospect of crises and disasters is a core theme. An early case is Pierre Wack’s scenarios at Royal Dutch/Shell (cf. Schwartz 1995). In the 1970s, Pierre Wack and his colleagues anticipated the oil crisis. They warned managers that the Arabs would very probably demand higher

prices for their oil, which would present an existential threat to the company's survival.

Shell's directors listened carefully as Pierre presented [his] scenarios. The directors understood the implications: they realized that they might have to change their business drastically. Pierre waited for a change in behavior at Royal Dutch/Shell, but no change in behavior came. That's when he developed his breakthrough: scenarios, as he later put it, should be "more than water on a stone." To be truly effective, they had to "change our managers' view of reality"(Schwartz 1995: 6f.).

Here, Pierre Wack experienced what today has become a core insight of the change management literature: A necessary condition of successful processes of collective change is the acceptance – or *internalization* – of the *need* for change (cf. Kotter and Rathgeber 2005). Going beyond mere 'cognitive' knowledge of possible future threats, this includes an emotional and/or imaginative component. In particular, if present conditions are satisfying and 'business as usual' has proved successful, mere 'information' about a future threat will not motivate people to change their behaviour.

Accordingly, Pierre Wack now developed a different type of scenario whose core intention was to make threats concrete and tangible for the managers of a hitherto highly successful firm.

In this new type of scenario, there were no more simple tales of possible futures. Instead, Pierre described the full ramifications of possible oil price shocks. He tried to make people feel those shocks. "Prepare!" he told oil refiners and marketers. "You are about to become a low-growth industry" (Schwartz 1995: 7).

A core challenge of the scenario technique, in this reading, is to 'change the mind-set' of recipients – to unsettle their complacency, to foil the human tendency to ignore unpleasant information. Only under these conditions will recipients take a future threat as a premise of their present behaviour.

Internalization of Environmental Threats: A Necessary Condition for SDG Implementation?

While the SDGs are no scenario, Pierre Wack's insights at Royal Dutch/Shell can be meaningfully related to them. In both cases, what is at stake are the very foundations of survival:

in the case of Wack's scenarios, the survival of a firm; in the case of the SDGs, the survival of humankind. Also, in both cases, the future threats are not yet perceptible for those (or many of those) concerned. The managers of Royal Dutch/Shell were top leaders of a very successful firm in a global key industry. Similarly, the biggest polluters, who are key for achieving the environmental goals of the SDGs, are at the same those who suffer least from consequences of climate change (Beck 2010). Finally, both Wack's scenarios and the SDGs are transformational agendas. Both demand changes in long-held patterns of thinking and behaviour (UN 2015: 1). Against the background of these similarities, three central questions guided the discussions about SDGs and Common Global Challenges at the Masterclass:

1. Do the SDGs help to internalize the environmental risks we are taking, and should they help to do so?

2. Have the initiators of the SDGs internalized these risks, and have we internalized them?

3. How can the implementation of the SDGs' sustainability targets be supported by making risks/threats tangible?

By taking a reflexive approach to these questions, the group critically highlighted three points. First, internalization of SDGs does not mean internalization of a threat but rather the beginning of a discourse. The 'internalization' of this global agenda – its 'adoption' – can only happen through participation. This will unavoidably make visible different views on the SDGs. The pluralism and diversity of the world will become manifest in discussions on the SDGs. To internalize the SDGs therefore can only mean starting to communicate about them. While welcoming pluralism, the group recognized a need for integration of different disciplinary perspectives, which led to the question how such integration could be achieved. Second, the alleged need for internalization of some future threat only follows from a particular notion of time. It presupposes a Western concept of time as a unilinear sequence of events, as a teleological process. But other cultural accounts imagine time as a circular process, or offer dialectical and more open time concepts. For some, present and future can co-exist in the same time in point. Third, calls for threat internalization raise questions of control, power, and *gouvernementalité*: If people accept the threats discovered by scientists, and as a consequence, change their behaviour, they are, in a way, 'governed' by the SDGs. Inducing fear in people can be an effective means of control. Therefore, the communication of threats should be carefully reflected upon.

Other arguments referred to different groups and societal sectors, asking which of them actually have internalized environmental risks, and which have not. Thus, from the perspective of science, it was argued, the problem is now implementation, but not internalization any more. But what about the public at large? Today, environmental issues seem to be well-established in the media. Rather than excluding environmental threats, the media are selective with regard to successes. For example, ozone depletion has been effectively stopped – but nobody knows that. In order to motivate engagement in environmental issues, there must be positive messages about successes that have been achieved (cf. Kotter and Rathgeber 2005). At the same time, such successes can foster trust that experts will deliver working solutions. An undue technological optimism, in combination with incomplete knowledge of risks, can be a barrier to the implementation of the SDGs. What is more, the media do not only report environmental risks – they also present advertisements that stimulate ecologically harmful consumer behaviour. Thus, large parts of the economy do not have an interest in environmentally benign everyday behaviour.

The insight into the contradictory messages of the media turned the discussion to the link between environmental risks and individual behaviour. *Narratives* are needed in order to internalize and implement the SDGs. In contrast to the SDGs, which remain rather abstract, narratives incorporate concrete courses of action. With this, they provide a necessary precondition for SDG implementation: Only if they know what practical action to take can people contribute to realizing the SDGs. But what would be an appropriate scope of SDG narratives? There was a broad consensus on the need for some middle-level narratives. On the one hand, which of the many goals and targets are most urgent and most feasible, and how they can be achieved differs between regions and countries. This renders a global SDG narrative implausible. On the other hand, while local SDG narratives can be very effective, there is still a need for a more integrative view that makes visible how a larger collective can achieve the SDGs in a more or less coordinated way.

Against this background, it was also discussed whether such narratives should only be positive or also be threatening or pushing. Several discussants had reservations about the communication of threats and negative messages. People are 'fed up with being guilty and not being allowed to do things,' some argued. Also, research from behavioural economics shows that describing a behaviour as undesired usually reinforces this very behaviour. Therefore, using positive messages and designing choice architectures towards supporting non-polluting behaviour would be a more adequate means for implementing the SDGs (Thaler and Sunstein 2008).

At the same time, in some cases, negative sanctions up to legal prohibitions seem to be the most effective way of inducing change towards more ecological behaviour patterns. Thus, Dalkowski (2017) calls on policy makers to prohibit plastic packaging where it can be avoided, for example, take-away coffees and salads in plastic bowls, and to discourage unnecessary car trips, and the like. Against the liberal position, he argues that buying take-away coffee is not an essential freedom but rather flows from convenience. Just not having the option to consume in an ecologically detrimental manner would relieve people of the burden of decision-making and increase their freedom. In sum, 'carrots' as well as 'sticks' might be important parts of narratives that contribute effectively to implementing the SDGs.

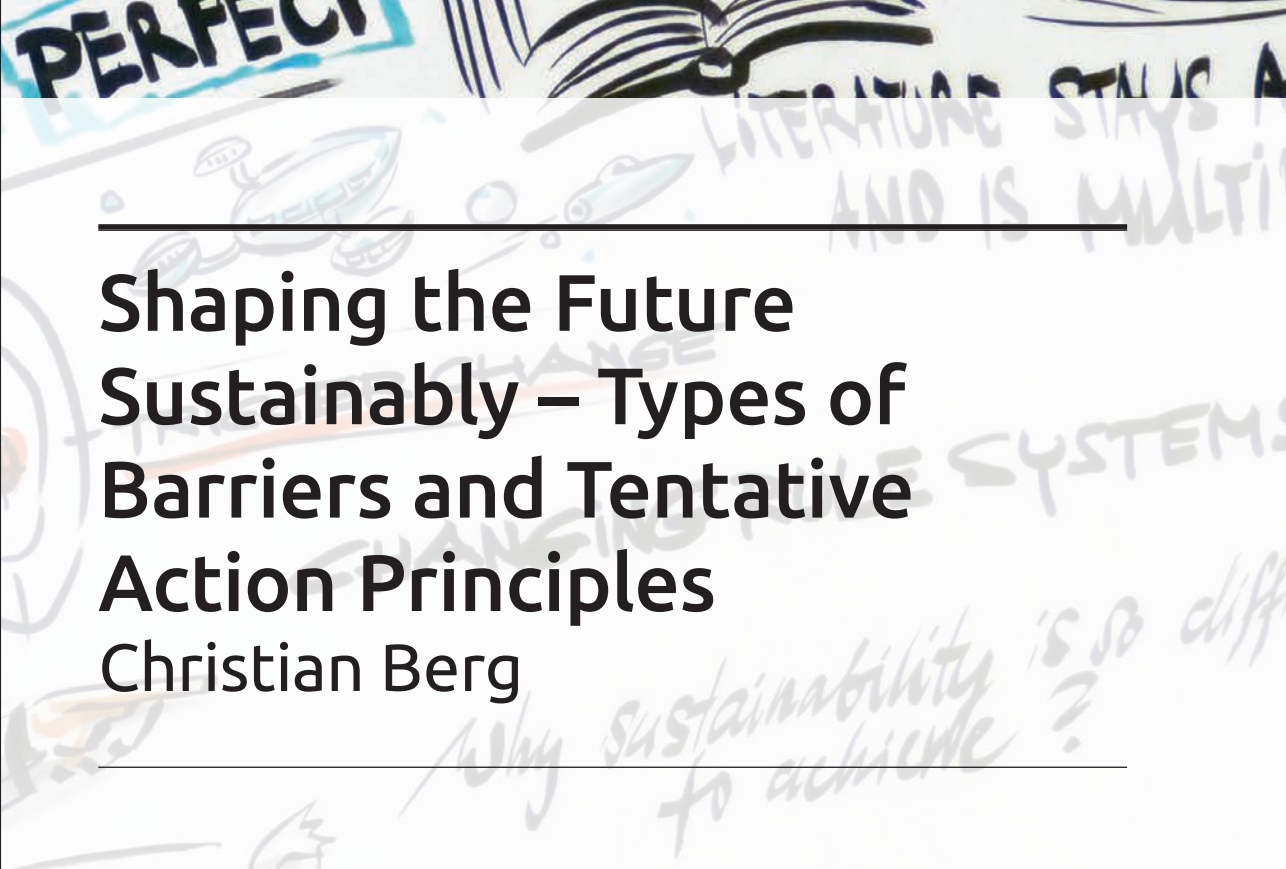
Conclusion

What is interesting is that at no point did discussants take up the question of whether they themselves have internalized the ecological threats. In my personal view, some comments underlined the importance of internalization. They showed that we might not yet have internalized the existential character of environmental damage, and that such an internalization could powerfully contribute to implementing the sustainability component of the SDGs. During the Masterclass, the relevance of threat internalization was repeatedly highlighted by Nebosja Nakicenovic. In his presentation, he very clearly communicated the urgency and existential character of several ecological risks. As a take-away, in his concluding remarks, he reminded participants that all of us would probably not have the time to reflect and decide on all the questions discussed during the Masterclass.

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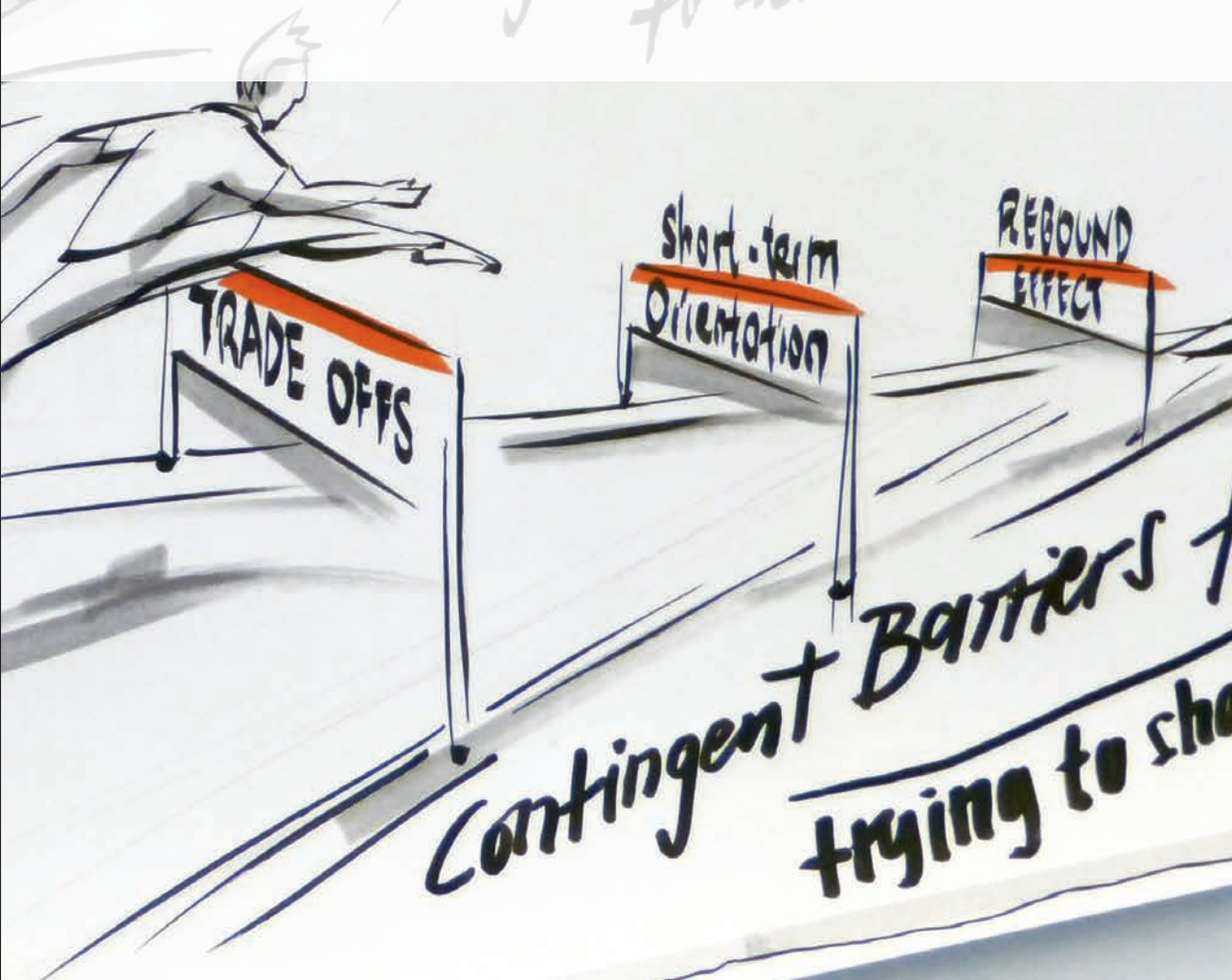
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Shaping the Future Sustainably – Types of Barriers and Tentative Action Principles

Christian Berg



1 'Expect the unexpected!'

'Expect the unexpected' could be a general rule for scenario building and policy making for a sustainable future. The world has become much more unpredictable recently – many regions exhibit political constellations and developments which were inconceivable only a few years ago. The best plan is futile if its underlying assumptions change. The best international agreements might become worthless overnight if the political systems in the undersigning countries change. The lesson to be learned by those striving towards a sustainable future is to be prepared for the unexpected. This requires a bird's eye view and consideration of the broadest set of challenges to sustainability. As in risk management, it is important to try to reach a complete 360-degree perspective on the topic in order to prevent the incident from happening. What are the challenges, what are the barriers to sustainability?

The following remarks will first suggest a typology of barriers to sustainability, which should support an understanding of their nature and mechanisms. The paper will then, secondly, propose ten principles for sustainable action which admittedly do not address the barriers one by one but which could nevertheless support decision making processes at the actor level.

2 Typology of Barriers to Sustainability

In its report on a social contract for sustainability, the German Advisory Council on Global Change (WBGU 2011) deals with barriers to a transformation towards a sustainable society. It discusses five types of barriers: path dependencies, tight timeframe, barriers obstructing global cooperation, rapid urbanization, and easily available cheap coal supply (e.g. WBGU 2011: 6, 64–5). These barriers differ in category: for instance, cheap coal supply can be seen as caused by a wrongly set market framework (i.e. neglected negative ecological externalities), while urbanization describes a multi-causal development, which comes along with modernization and social differentiation etc.

This article suggests a typology of barriers to structure their categories according to their origin. Some barriers are inextricably tied to the concept of sustainability itself; they are bound to the very nature of the concept. They will be called *intrinsic barriers*. Trade-offs, for instance, are always involved in promoting sustainability, since there is no well-defined optimum in a multidimensional concept. Other barriers are just coincidental, contingent barriers. They might be difficult to overcome but they are independent from the concept of sustainability.

In the following, they are called *extrinsic barriers* – they do not originate in the concept of sustainability itself. The current set-up of the market framework is one example and could be changed, at least in principle.¹

¹ The following does not claim to give a complete list of barriers. Rather, it is an attempt to structure the most important barriers to sustainability – it is a work in progress and warrants further elaboration, justification and extension.

3 Intrinsic Barriers

3.1 Barriers related to immediate threats: poverty, social instability and wars

People will not care about the future if the present absorbs their full attention. Before bothering about mid- or even long-term consequences of their actions, rational agents will care about their immediate future and protect their own lives and the lives of their loved ones. One does not need to accept Maslow's pyramid in every detail to realize that immediate threats to physical existence preclude consideration of the long term. Data on countries' environmental performance prove this relation. The Yale Center for Environmental Law & Policy publishes rankings of countries' performance on environmental issues in two areas: protection of human health and protection of ecosystems (Hsu et al. 2016: 11). 'European nations dominate the EPI's top performers, with all of the top 10 slots occupied by European countries ... At the Index's low end, Sub-Saharan African countries are the poorest performers, occupying 16 of the bottom 20 positions' (ibid.: 112). The poorest environmental performers 'are those with significant political or economic strife, suggesting again that other pressing issues can sideline effective environmental policy' (Hsu et al. 2014: 1–2). Even worse is the situation in times of war – the most unsustainable condition conceivable. In addition to all the suffering and distress, wars often leave a significant impact on the environment. The WBGU describes this impact in terms of the 'Scorched Earth Syndrome', which implies a 'loss of biodiversity due to chemical warfare agents (e.g. agent orange), permanent soil degradation due to mining, contamination caused by fuels and explosives, health hazards, greater flows of refugees' (WBGU 1996: 120).

3.2 Trade-offs

The multidimensional character of the concept of sustainability is most evident in the Sustainable Development Goals (SDGs) with their 17 indicators and 169 targets. No rational and well-meaning person could question any single SDG. Yet nobody knows whether it will be possible to achieve the 169 targets simultaneously. In fact, there are serious doubts about that. Sustainability in general and the SDGs in particular

² This is the definition of a trade-off. According to Webster, a trade-off is 'balancing of factors all of which are not attainable at the same time' (<https://www.merriam-webster.com/dictionary/trade-off>, accessed 9 May 2017).

include targets that are not attainable at the same time.² For instance, we might not be able to meet the overall demand for biomass if we want to avoid further deforestation and desertification and preserve the few remaining natural habitats. A study by the Institute of Advanced Sustainability Studies concludes: 'the proposed SDGs are not sustainable, because future demands for biomass, as implied by the proposed SDGs, cannot be met sustainably' (IASS 2015: 4). This paradigmatically illustrates the intrinsic difficulty in achieving sustainability: seventeen sustainability goals claim to be sustainable but their simultaneous realization would not be.

It would not be surprising if an optimization problem with 169 parameters does not have a single global solution. Nobody knows whether a global optimum for this function would even exist in theory, not to mention achieving it in practice.

3.3 Conflicts of interest

Closely related to trade-offs and inescapably tied to the concept of sustainability are conflicts of interests. The most obvious conflicts of interests are, of course, situations in which one party (or several) overrules the legitimate interests of other parties by exercising power. Limiting such power politics remains a constant struggle for humanity in general and for international politics in particular. It is not *specific* to the concept of sustainability but *intrinsic*.

Conflicts of interest occur everywhere and often they raise difficult ethical questions. For instance, how do we morally assess the industrialized countries' contribution to resource depletion, pollution and global warming? These countries have undoubtedly been the main beneficiaries of the booming industrialization. However, the severity of the related environmental impact is a rather recent insight – and responsibility presupposes some understanding of the related consequences.³ How could one fairly assess a moral obligation of the present for actions of previous generations? Humanity cannot afford for all developing and emerging economies to follow the historical pattern of the 'North' – but the 'North' has no right and no means to prevent growth in these regions.⁴

³ Less than 140 years ago, Thomas Huxley stated that 'probably all the great sea fisheries are inexhaustible; that is to say, that nothing we do seriously affects the number of the fish' (Huxley 1883).

⁴ Apart from moral reasons, the 'North' should have a strong self-interest in substantial development of less developed regions, simply due to the abovementioned relationship between environmental performance and economic situation.

3.4 Complexity of functional chains

It is an essential insight of the concept of sustainability that today's global challenges have to be considered and addressed in their context and their interrelation with other domains. The WBGU introduced the concept of syndromes to describe, illustrate and reduce the complexity of issues related to global change (WBGU 1996).⁵ Syndromes are trans-

⁵ Syndromes are functional patterns, which 'are unfavorable and characteristic constellations of natural and civilizational trends and their respective interactions, and can be identified in many regions of the world' (WBGU 1996: 112).

sectoral in nature: they affect the atmosphere, the biosphere, the economy, society and different environmental media etc. (WBGU 1996: 112). The Sahel Syndrome, for instance, describes a complex of symptoms which occur when the ecological carrying capacity of arid regions is exceeded, leading to soil degradation, desertification, the depletion of fossil aquifers, a loss of biodiversity, changes in regional climate, migration etc. (WBGU 1996: 116, 117). Even this relatively confined pattern involves a great variety of factors, causal relations and interdependencies. Any prediction of future developments cannot be more than tentative and vague approximations.

How can we hope to assess the long-term consequences of human behaviour in light of the huge complexity of the global nexus of ecological, economic, and social and political systems and their interdependencies? This is not an issue of ignorance alone – the future is principally unpredictable. History unfolds in contingent, accidental ways. Even simple mechanical systems exhibit (deterministic) chaotic behaviour.⁶

⁶ Deterministic chaotic means that the equations are all mechanistic (i.e. Newtonian physics) but the result is still a chaotic and therefore principally unpredictable state.

3.5 Barriers related to the human condition

There are some barriers which can be interpreted as side-effects of the human condition, of humans as *social beings* and as humans as *tool-making animals*.

3.5.1 Human laziness, ignorance and selfishness

The greatest contributions to unsustainability stem from structural, i.e. amoral reasons – an insight which alleviates moral agents' burden. Nonetheless, human laziness, ignorance and selfishness also contribute. There is a lot that enlightened consumers, voters and citizens could know and could do, but which does not happen because of laziness, ignorance and selfishness. Our consumption of tropical fruits imports water and energy from the South, and our fast moving consumer goods are bought by greenhouse gases, pollution and questionable social standards in Asia. The abovementioned consumerism is partly driven by our insatiable desire for ever-increasing consumption. Western lifestyles bear a considerable burden of global resource depletion and pollution.⁷

⁷ This category is close to what WBGU calls loss aversion: 'In addition, the main barriers which make it more difficult for certain individuals or social environments to make sustainable decisions are considered to be the lack of long-term orientation, loss aversion, and path dependencies in general.' (WBGU 2011: 78ff.)

3.5.2 Range and development of technology

It is technology which made *homo sapiens* so powerful; through technology humans could become the most influential factor of our current geological era, the 'Anthropocene' (Crutzen 2002). Human behaviour has never had such far-reaching consequences in time and space. Radioactive waste needs to be stored away

for a million years, germline modifications affect all descendent individuals, and the cumulative effect of the 'normal' usage of our technologies pollutes the planet in an unprecedented way. Strikingly different to this magnitude of human ecological impacts, however, is our limited ability to steer technological development and effectively control technological (side-)effects.⁸

⁸ There are important exceptions, such as the banning of CFCs by the Montreal Protocol, the Non-Proliferation Treaty for nuclear weapons and the Convention for the Protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine, which prohibits, among other things, the cloning of human beings. The latter is even an example of anticipatory political action.

3.5.3 Differences and changes in value systems

Different societies have different cultural heritages, value systems, concepts of justice, well-being, equity etc. There are different views on slavery, on colonialism, and, as mentioned above, on the historical contributions to environmental degradation. These differences challenge the conclusion of international agreements, which have become even more important in light of the global challenges.

Moreover, the value systems are not static but rapidly changing. Value systems have always changed over time and evolved due to intercultural exchange. In the shrinking, globalized world of today, however, the speed of change and the exposure to different cultural traditions have also increased. Infrastructural, information and communication technologies have enabled and driven globalization at a breath-taking speed and depth⁹, challenging cultural and societal developments. Cities like Karachi, which were villages a hundred years ago, have evolved into megacities of millions of citizens. One need not follow Huntington's theory of a 'clash of civilizations'¹⁰ to realize that globalization is challenging traditional patterns and value systems. Globalization has intensified the challenge of modernity – but many people react against these challenges and 'pull back from the disgrace of using reason in one's own right', which is Meyer's definition of fundamentalism (Meyer 1989). However, fundamentalism and populism are gaining global influence and thereby fuelling social conflicts at the national and international level and endangering global cooperation.

These five types of barriers – the dominance of immediate threats, trade-offs, conflicts of interest, the inherent complexity of functional chains and the constitution of humans and their societies – will always accompany any realization of sustainability. You cannot have the latter without tackling the former.

4 Extrinsic Barriers

Extrinsic barriers are those which do not originate in the concept of sustainability. Two types are distinguished here. The first category relates to barriers resulting from faulty institutional frameworks (e.g. market framework), while

⁹ This development started almost 200 years ago. Even the steamship was celebrated as a revolution by contemporaries, since it would 'abolish the limitations of time and space' (cf. Berg 2005: 35f.).

¹⁰ Huntington (1993) described different cultural backgrounds as major sources of conflicts in the post-Cold-War period: 'It is my hypothesis that the fundamental source of conflict in this new world will not be primarily ideological or primarily economic. The great divisions among humankind and the dominating source of conflict will be cultural. Nation states will remain the most powerful actors in world affairs, but the principal conflicts of global politics will occur between nations and groups of different civilizations. The clash of civilizations will dominate global politics. The fault lines between civilizations will be the battle lines of the future.'

the second category results from mechanisms which can be described as Zeitgeist-related.

4.1 Barriers resulting from a deficient set-up of the institutional framework

4.1.1 Market framework

The Brundtland definition of sustainability implies that no generation should burden future generations with the task of compensating for their expenses. This is applying the polluter-pays principle to generations. The originator should provide compensation. At least in the European context, there seems to be political consensus about this principle. The Treaty on the Functioning of the European Union states that the EU policy 'shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay' (EU 2012: Art. 191 (2)). In a similar way, the German Federal Government's sustainability strategy postulates: 'Each generation must solve its own problems and not burden the next generations with them. It must also make provisions for foreseeable future problems' (Bundesregierung 2016: 12, 33). Despite such statements of intent, the market framework is not set up accordingly. In many cases, the polluter pays principle is violated. This is most evident in cases of environmentally harmful activities, which are subsidized in the order of EUR 57 billion every year in Germany alone (UBA 2016: 6). Polluters do not pay – indeed, they are subsidized. The global subsidies on fossil fuels alone add up to USD 500 billion per year (IEA 2014: 313).¹¹

¹¹ The cheap and easy coal supply which the WBGU report refers to as one barrier (see above) is, of course, also one aspect of the faulty set-up of the market framework.

4.1.2 Lack of governance

A sustainable future must be a future for all of humankind.¹² You cannot aim for a humane future by sacrificing humanity in the present age. Humanity's fair and peaceful cooperation is therefore a precondition for a sustainable future. However, there are no effective global correlates to most of the well-established institutions and authorities that exist at a national level. Furthermore, new actors have emerged from the private sector and from civil society who do not have a formalized mandate but have nevertheless become important stakeholders in international policy making. The urgently needed global governance 'is still a work in progress and is advancing only slowly... The reinvention of policy under the conditions of globalisation is still in its infancy' (Messner 2011: 20–1).

¹² This is both a factual and a normative statement. *Factual* because it is simply impossible – at least under the conditions of our current civilization in an interconnected world – that one region, state or community enjoys peace and harmony within itself and with its natural environment, while the world around it goes to pieces. It is a *normative* demand as well, since the concept of sustainability starts with 'meeting the needs of the present...'.

4.2 Barriers of Zeitgeist-dependent mechanisms

A second extrinsic category comprises barriers that have a strong relation to the dominant patterns of consumption and production. Short-termism, rebound effect and consumerism might be viewed as Zeitgeist-related, since the Zeitgeist describes the 'general intellectual, moral, and cultural climate of an era' (Merriam-Webster).

4.2.1 Short-termism

Closely related to the market framework (but not limited to it) is the short-term orientation of the dominant incentive structures in our societies. Driven by rapid technological development (e.g. Moore's Law), shortening cycles of research and development, of production and consumption, instantaneous global communication and social media, quarterly reports and investors' expectations of a quick return, short-termism penetrates all aspects of life. In light of fierce global competition, speed and readiness are major competitive advantages – not only in business, but also in media, in politics, and increasingly in science too. Being fast does often beat being better. Seeking proper, sound and sustainable solutions does take time (and costs). How can we establish sustainable solutions if success is being measured in annual quarters, if politicians are competing in terms of legislative periods, but the implications of their decisions will literally affect the next million years?¹³ The urgent dominates the important – that is a huge challenge for realizing viable, future-oriented, sustainable solutions.¹⁴

¹³ Consider, for instance, final storage facilities for radioactive waste.

¹⁴ The lack of long-term orientation is also one of the barriers discussed in the WBGU report on transformation (WBGU 2011: 78).

4.2.2 Rebound effect

Technologically driven efficiency gains are often (over-) compensated by a change in behaviour and lifestyles.¹⁵ As Ian Barbour puts it: 'Yesterday's luxuries are today's necessities' (Barbour 1993: 14). Natural resources (as well as the environment as a sink for our industrial metabolism) are so cheap that technological progress leads primarily to increased comfort and luxury instead of more efficient use of resources.¹⁶ For instance, since the 1970s the heating demand for German households has decreased by one third – if calculated per space. The heating demand per capita, however, has actually increased, since the living space per capita has expanded by more than 70 percent in the same period (BMW 2011: 29).

¹⁵ There are several different types of rebound effects. Tilmann Santarius distinguishes thirteen different rebound effects for energy efficiency alone (Santarius 2012). In the current context, however, it is sufficient to refer to the principle they all share: efficiency gains are (over-) compensated by behavioural changes.

¹⁶ This points to the importance of a proper set-up for the market framework.

4.2.3 Consumerism

The prevailing consumerism is a major driver of resource depletion and pollution, in short: of non-sustainability. Erich Fromm sees consuming as 'a form of having, maybe the most important one in today's "abundance societies"'. Consuming would diminish anxiety, 'since that which I consume cannot be taken away from me, but it forces me to consume more and more, since that which is consumed shortly ceases to satisfy me. The modern consumer could identify with the formula: "I am, what I have and what I consume"' (Fromm 1980: 37)¹⁷. Arguing for the autonomous laws of consumption, Günther Anders even states: 'Most products ... hunger for being-consumed... In order to get the production going, another product (of second order) needs to be created and squeezed between product and human being, and this product is called "demand". ... We need to need products in order to be able to consume them' (Anders 1980: 16). This is exactly the situation Steve Jobs, co-founder and chairman of Apple Inc. describes, although he comes from a quite different living environment: 'People do not know what they want until you show it to them' (Jobs 1998).

¹⁷ Translated from German by the author.

5 Addressing the Barriers: Tentative Principles for Sustainable Action

How can such a typology of barriers help to operationalize sustainability? There is no quick fix to any barrier discussed above. Each barrier relates to a great variety of actors, levels and institutions. Nevertheless, the typology described can help in identifying what is most needed in each category. In the following, I suggest a list of principles for sustainable action. Many of them apply to different barriers. However, whereas the typology of barriers comes from the conceptual level, as it were from the top down, the action principles come from the bottom up and take an actor's perspective.

1. Strive for Peace and Poverty Reduction

Ending human suffering and alleviating misery is one of the most noble and most important aspirations. These are goals in themselves and do not require any further justification. However, we could see social stability and peace as essential preconditions for any pursuit of sustainability as well (cf. 3.1). Being busy with combating climate change, we might not realize that international conflicts can pose a much greater risk to the Paris Agreement than unambitious NDCs¹⁸.

¹⁸ Nationally Determined Contributions.

2. Strengthen Mutual Understanding, Dialogue Capabilities and Mindfulness

The best plans can fail if not everybody at the table feels respected and honoured. There is an increasing awareness of the potential of mutual understanding, of nonviolent communication and dialogue, of collective leadership and mindfulness. Scholars like Marshall B. Rosenberg¹⁹, Otto Scharmer²⁰ and Steven R. Covey²¹ have pointed to intangible, 'soft' skills and their importance for conflict resolution, negotiation and leadership (cf. 3.1, 3.3, and 3.5).

¹⁹ Rosenberg developed the globally applied method of non-violent communication. He used this method in several peace programmes in conflict zones (Rosenberg 2001: 212).

3. Maintain or Increase Option Diversity

We do not know what the future will bring, and we can hardly tell what would really be sustainable in the long run. However, we do know that we need to maintain our flexibility to respond to unforeseeable developments. The more uncertain the future gets, the more important it will be to keep and maintain a plurality of options.²² This implies avoiding lock-in effects. We should be aware of path dependencies (cf. WBGU 2011: 78ff.) and avoid actions which predetermine future action in an unsustainable manner. Any deploying of coal-fired power plants today implies related carbon emissions for the coming decades of operation. Maintaining or increasing the option of diversity is a general principle for any intelligent actor at all levels, from individual behaviour to geopolitical crises.

²⁰ In his *Theory U* Otto Scharmer attempts to explore the source from which we operate: 'We know a great deal about what leaders do and how they do it. But we know very little about the inner place, the source from which they operate.' (Scharmer 2007)

²¹ Covey pleads for emphatic listening for a genuine understanding of another person and for thinking in terms of win-win as a code of human interaction (Covey 2004).

4. Increase Transparency

Conflicts of interests and trade-offs cannot be avoided (cf. 3.2, 3.3) but they should be made obvious to allow public debate and discourse. Transparency is a key prerequisite for any fair negotiation – transparency about the stakeholders, their respective interests, and about winners and losers of different policy options. Of course, there will always be a mismatch in power of the parties involved but without transparency, any public awareness of inequities will be impossible. A lack of transparency about international value chains, about pollution or non-compliance with labour standards leaves consumers ignorant about the effect of their consumption. Intransparent financial flows obscure illegal and illegitimate operations. Lobby groups imperil democratic decision-making processes if they operate without transparency. There are various constellations in which increased transparency could avoid fraud, support fairness, and provide a basis for negotiations.

²² The idea of maintaining option diversity is taken from Hubig (1993).

5. Establish Long-Term Incentives

Most areas of modern life exhibit short-term incentives (cf. 4.2.1). Reward is promised in terms of hours ('overnight delivery'), success is measured in quarters, compensation systems are bound to quarterly or annual performance, and politics is mostly concerned with a period of a few years as well. Compared to the timespans of processes of global change, ocean acidification or climate change, almost all human incentive structures are short-term. It is difficult to fight the *Zeitgeist* but an awareness of the issue might stimulate creative ways of implementing long-term thinking.

6. Implement and Observe the Precautionary Principle

Often we cannot foresee the long-term implications of technologies and their usage (cf. 3.5.2). The precautionary principle could decelerate the roll-out and development of technologies. In a competitive global market, however, such principles will be seen as innovation brakes. To become effective, therefore, there will inevitably be a need to find global consensus on this principle – which also highlights the importance of the next principle.

7. Explore Mechanisms of and Seek Partnerships for Multi-Layered Governance

Effective global governance is a pivotal precondition for tackling many other barriers (deficient market framework, conflict resolution, peacekeeping etc.). While efforts are needed to reform and empower global institutions (above all the UN), cross-sectoral, multi-layered collaboration might be more promising in the short term. Multi-stakeholder initiatives have driven *de facto* standards for businesses commitments towards sustainability (UN Global Compact), for disclosure of GHG emissions (Carbon Disclosure Project) or corporate reporting (Global Reporting Initiative). NGOs advise governments and corporations alike, and they have become indispensable voices in the call for sustainability. Global governance policy needs to account for this new role of the private sector and for multi-actor scenarios (cf. Messner 2011: 19). Cross-sectoral partnerships should be sought and fostered. The mechanisms of multi-layered governance need to be explored, and top-down and bottom-up governance approaches need to be combined (cf. WBGU 2016: 384).²³

²³ 'Overall, the WBGU advocates a mix: vertical, top-down governance structures should be complemented by bottom-up approaches' (WBGU 2016: 384).

8. Seek Multiple Wins

The world is increasingly networked; networks have become the dominant structural form in personal relations, in business, among activists and scientists, but also among terrorists and criminals and many more. The operation of networks requires mechanisms of mutual exchange. Mutual benefits, trust and openness are therefore much more significant in networks than in other forms of organization like markets or hierarchies (cf. Powell 1990; Berg 2005: 206f.).²⁴ The more important networks become as players on the international scene, the more important it will be to seek multiple wins – for instance, in mitigating conflicts of interest (3.3) or conflicting value systems (3.5.3).

²⁴ This only refers to the *internal* functioning of a network and does not exclude, of course, the possibility that a network operates with opposing attributes to the world outside of it.

9. Reduce Complexity – Make the Sustainable Solution the Simplest One

Currently, the more sustainable alternative is mostly not only the more expensive one (due to additional costs of incorporating the effects of negative externalities) but also the more complicated one. At the consumer level, ‘sustainable’ needs to mean ‘simple’ in order to be adopted. We cannot burden the consumer, for instance, with the hassle of studying several different labels at the point of sale.²⁵ If we want to tackle human laziness and ignorance (3.5.1), we need to reduce the complexity of global interdependencies and causal chains for the context of individual behaviour.

²⁵ For this reason the Task Force for Sustainable Business and Growth within Chancellor Merkel’s future dialogue suggested the development of a ‘meta-label’ for sustainable consumption, which would enhance transparency on a product’s sustainability performance along its entire value chain (Berg et al 2012: 90f.).

10. Foster Interdisciplinarity and Comprehensive Visions

Today’s challenges cross the borders of our disciplines and categories. Interdisciplinary collaboration is often claimed but difficult to achieve in substance. Continuous efforts are needed to counterbalance ever-increasing specialization with measures of knowledge integration, cross-disciplinary learning, and self-critical reflection on the strengths and limits of one’s own disciplinary methods and paradigms. Furthermore, any isolated promotion of single SDGs risks thwarting other goals. It is not even clear whether the SDGs in total can be reached sustainably (cf. 3.2). We need to develop comprehensive visions which address several SDGs at the same time without imperilling the others. ‘Desert2Eden’ is such a vision – combining the rehabilitation of damaged ecosystems in arid regions with the use of solar radiation and infrastructure development – which could potentially support the achievement of nine (of the 17) SDGs directly (cf. Berg 2015).

To sum up, we can see that the multitude of barriers to sustainability can be categorized according to their origin. The suggested typology, although only an initial and tentative proposal, takes a conceptual, top-down view of the different barriers. The proposed principles for sustainable action, however, take a bottom-up approach, an actor perspective. They are meant to support practical decisions in politics, in business, in civil society or personal life. Most principles tackle several barriers. The hope is that they will help in addressing the barriers, reducing complexity for the individual and supporting the transition to a more sustainable global society.

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Development Strategies with Low GHG Emissions: The Case of Brazil

Emilio Lèbre La Rovere



1 Introduction

Brazil occupies a unique position among the major greenhouse gas (GHG) emitting countries due to its low per capita energy-related GHG emissions (2.4 metric tons CO₂e in 2014), attributable to Brazil's abundant clean energy sources. The sources of major emissions have historically been concentrated in agriculture, forestry and other land use (AFOLU), and are related mostly to deforestation, crop growing and livestock. Recently, deforestation in Brazil has slowed considerably, to the point where forestry has ceased to be the major source of emissions. Thanks to reduced deforestation, Brazil cut its overall GHG emissions by 41 % from 2005 to 2012, and its total GHG emissions per capita decreased from a high of 14.4 tCO₂e in 2004 to an estimated 6.5 tCO₂e in 2012 (La Rovere et al. 2013).

Brazilian GHG emissions increased from 1.4 billion metric tons CO₂ equivalent (GtCO₂e) in 1990 to 2.1 GtCO₂e in 2005, followed by a substantial reduction to 1.4 GtCO₂e in 2010, thanks to the sharp fall in the rate of deforestation (see Figure 1).

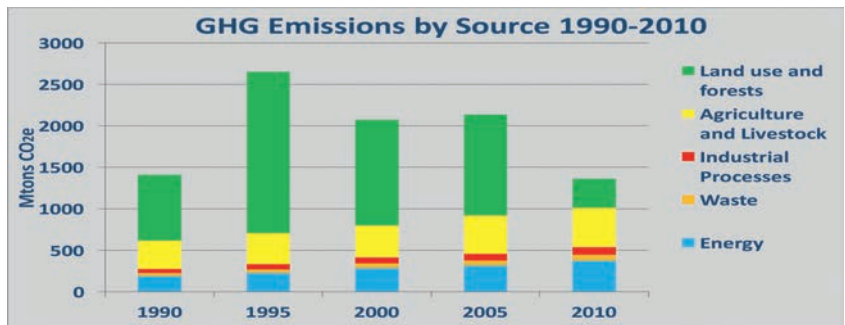


Figure 1: GHG Emissions by Source in Brazil, 1990–2010

Source: Brazil 2016 (million tons of CO₂e – MtCO₂e using GWP-100, IPCC AR5), except for 2005; data for Land Use and Total in 2005 consistent with the Brazilian INDC (Brazil 2015)

As a consequence of the lower rate of deforestation, the share of CO₂ in the GHG emissions mix declined sharply between 2005 and 2010. The recent upturn in GHG emissions has been driven, notably, by methane emissions from enteric fermentation in Brazil's large cattle herd (numbering 213 million head in 2012). Also, the share of fossil fuel combustion in total GHG emissions has been steadily increasing in recent years. Fossil fuel combustion ranked second, after agriculture and livestock, in 2010 (see Figure 1). Among fossil fuels, oil is by far the dominant source of CO₂ emissions, followed by natural gas and coal (220, 62 and 44 MtCO₂ in 2010, respectively).

Brazil faces the challenge of building upon its historically low energy-related GHG emission levels through new decarbonization

strategies, while pursuing higher living standards for its population. Average annual income per capita in 2005 was only \$4,767. Inequality, as evidenced by Brazil's uneven income distribution, is a major problem. Brazil has made some progress in reducing income inequality in the last decade, thanks to the government consistently increasing the minimum wage faster than the inflation rate and introducing social transfer programmes (e.g. Bolsa Família). They decreased the Gini coefficient from 0.57 in 2005 to 0.53 in 2013, but inequalities are still a leading concern: in 2013, 15.5 million people in Brazil were living below the poverty line, of whom 6.2 million were living in extreme poverty. Inequality between regions is also a problem; reducing this is the objective of some regional incentive programmes.

2 Brazil's Future Low-Emission Development Pathways: the IES-Brasil study

2.1 A process designed for stakeholder involvement

The IES-Brasil study (La Rovere et al. 2016) has assessed the economic and social implications of different sets of GHG mitigation measures in Brazil up to 2030. Besides this new focus, which has bridged a key gap in the Brazilian literature in this field, another difference from previous scenario exercises was its use of a Scenario Building Team (SBT), made up of experts representing the viewpoints of a range of stakeholders. In a process involving five meetings and permanent exchanges in 2014–2015 and lasting more than one year, the SBT discussed the scenario assumptions for the implementation of a wide spectrum of mitigation measures in Brazil, including: energy efficiency, renewable energy sources, low-carbon agriculture and cattle raising techniques, transport modal shifts, methane capture in the waste sector (landfills and sewage treatment plants), and reforestation with native and fast growth species. This group agreed on assumptions for two scenarios with additional mitigation measures going beyond the extension of current governmental plans (the Governmental Planning Scenario, GPS). Its work was based on the assessment of barriers to the penetration of these mitigation options and the policy tools and measures required to overcome them.

The SBT agreed on assumptions for two scenarios (AM1 and AM2) with additional mitigation measures going beyond the extension of current governmental plans, one including measures costing up to US\$20/tCO₂eq, and the other up to US\$100/tCO₂eq. The study also assessed the macroeconomic and social impacts in Brazil should a global carbon tax on burning fossil fuels be agreed, testing both US\$20 and US\$100 per tCO₂eq (2005 values) in the AM1+T and AM2+T scenarios. The tax revenues were supposed to be fully recycled through lower social security taxes on labour, so that fiscal neutrality was ensured.

Preliminary results of IMACLIM-BR scenario runs were discussed, eventually improved and finally validated by the SBT. As a result, the Brazilian government had access to pioneer insights about the macroeconomic and social implications of additional mitigation scenarios up to 2030, providing valuable inputs from a variety of stakeholders to the decision-making process about the Brazilian pledge to COP 21 in Paris.

2.2 Methodological framework

The development of IMACLIM-BR was key in making it possible to carry out the IES-Brasil study. The investment required for the transformations is assessed through a one-way soft-link in sectoral modules with which a series of mitigation actions are associated. Each mitigation action presents, for a given level of specification, a cost and an energy use profile. For example, energy efficiency actions show a reduction in energy in their energy use profile, whereas mitigation actions related to biofuels consist of switching from fossil to renewable energy. Mitigation actions that are not related to energy demand or supply in the AFOLU and waste sectors are assessed directly through their associated emissions.

These sectoral results provide inputs to the CGE model IMACLIM-BR (*see Figure 2*). In this model, the technical coefficients of low-carbon scenarios are calibrated according to the percentage variation of energy use compared to the reference scenario, the Governmental Planning Scenario (GPS). Monetary values are the total investment requirements for all mitigation actions considered, per sector. The model ensures macroeconomic consistency between the sectoral modules and IMACLIM-BR framework through a few key variables, such as population, GDP, GDP structure and final energy consumption.

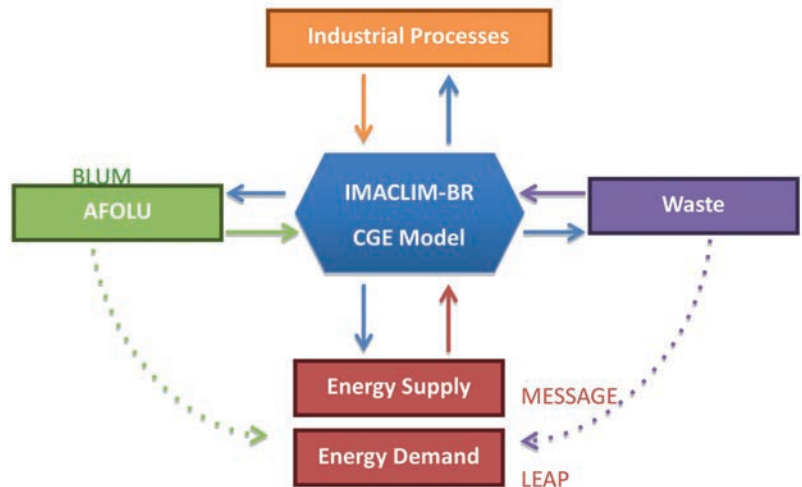


Figure 2: The Modelling Framework
Source: La Rovere et al. 2016

2.3 Main findings

An overview of the main findings of IES-Brasil, grouped according to their corroborative or innovative nature, is provided below:

In corroboration of previous studies, IES-Brasil concludes that:

1. The effort to regulate and decrease deforestation is the foremost element that will enable the country to meet its emissions reduction targets for 2020, established by law following the agreement made in Copenhagen. The various governmental mitigation programmes already under way should taper emissions at 1.2 billion tCO₂eq in 2020, which is similar to 2010 levels. This level is far below the voluntary target of around 2 billion tCO₂eq in 2020.
2. If no additional mitigation efforts are made, there is a tendency for emissions to rise between 2020 and 2030 due to the increase in the burning of fossil fuels and in agriculture and cattle raising activity.
3. There is a huge potential to reduce national GHG emissions through the implementation of a wide spectrum of mitigation measures, including: energy efficiency, renewable energy sources, low-carbon agriculture and cattle raising techniques, transport modal shifts, methane capture in the waste sector (landfills and sewage treatment stations), and reforestation with native and fast growth species (*see Table 1*).
4. Many of the mitigation measures can be implemented at low cost, such as those in the agriculture and cattle raising sector, energy efficiency and increased utilization of renewable energy sources like hydropower and sugarcane ethanol. Adopting these measures can result in a significant level of additional mitigation in relation to current governmental efforts, included and extended in the *Governmental Plan Scenario* (GPS). These results can be seen in the scenarios *Additional Mitigation 1* (AM1) and *Additional Mitigation 1 plus Carbon Tax* (AM1+T). If other measures are made viable, such as restoration of the Atlantic Forest, large-scale production of charcoal from planted forests, significant increase in intercity freight and urban passenger rail transport, it would be possible to reach a more ambitious level of mitigation. These measures were tested in the second set of mitigation scenarios *Additional Mitigation 2* (AM2) and *Additional Mitigation 2 plus Carbon Tax* (AM2+T).

Table 1: Cumulative avoided GHG emissions from 2010 to 2030 (Mt CO ₂ eq)		
	AM1	AM2
AFOLU	657.4	1995.6
Agriculture and cattle raising	260.3	259.2
Planted forests	29.6	427.3
Agroforestry systems	367.5	367.5
Atlantic Forest restoration	–	941.6
Energy Efficiency	408.1	791.3
Residential, commercial and services (includes solar water heating)	16.8	19.9
Industry (cement and steel) and oil refineries	38.7	382.7
Traffic optimization	30.5	30.5
Light duty vehicles	71.0	107.1
Heavy duty vehicles	251.1	251.1
Modal Shifts in Transportation	74.0	475.7
Urban transportation on wheels (BRTs, bicycle lanes and electric buses)	74.0	125.8
Urban transportation on rails (subways and tramways)	–	207.7
Freight transportation (railways and waterways)	–	142.2
Renewable Energy	524.1	813.3
Ethanol for passenger transportation	302.4	305.9
Biodiesel for freight transportation	121.3	265.2
Power generation	100.4	242.2
Waste	597.0	608.5
Total	2,260.6	4,684.4

Source: La Rovere et al. 2016

- There are various barriers, both economic or financial and non-economic (legal, regulatory and institutional), to implementing mitigation measures, and different means of overcoming them. Such means include microeconomic instruments and command/control tools (scenarios AM1 and AM2), or a global tax on the burning of fossil fuels (scenarios AM1+T and AM2+T).

Considering the assumptions adopted to run the economic models used in the IES-Brasil study (such as significant economic growth throughout the period up to 2030), and the hypotheses and mitigation measures selected by the Scenario Building Team (SBT), IES-Brasil has provided pioneer findings about the macroeconomic and social implications of additional mitigation measures beyond the extension of the government plans already under way (GPS):

1. The selected mitigation measures, additional to those already under way, can contribute to an increase in economic growth, depending on the way in which they are implemented. If these measures were to be implemented solely with microeconomic instruments and command and control mechanisms of the scenarios that do not consider a carbon tax, GDP would grow more than in the GPS. However, should the selected measures be implemented with a carbon tax, the impact on GDP will depend on the tax level required: up to US\$20/tCO₂eq, GDP would not grow less than in the GPS, as shown in the result of AM1+T; but with a tax of US\$100/tCO₂eq, used in AM2+T, GDP growth would be lower than in GPS, as a result of the decrease in total economic activity due to the tax levied on all countries.
2. Unemployment rates fall in all additional mitigation scenarios, even those considering a carbon tax, with the energy sector responsible for the most job openings. It is worth noting that in the scenarios that include a carbon tax, this results from the hypothesis that all revenue collected from the tax on burning fossil fuels would be used for relief of payroll taxes, in order to foster employment even with a reduction in global and national economic activity generated by levying the tax.
3. The selected additional mitigation actions contribute to an increase in average annual household income in all scenarios that include additional mitigation measures, with the largest gain for the poorest families, contributing to a small improvement in the distribution of wealth.
4. In scenarios with the selected additional mitigation actions, there is an increase in the level of prices compared to the GPS. This is due to the lower level of unemployment, which guarantees better salaries, higher production costs, and as a result, higher prices.
5. The selected additional mitigation actions have a positive impact on purchasing power, even given the increase in the level of prices. In the scenarios that consider a global carbon tax, only the richest class would lose purchasing

power compared to the GPS, while the purchasing power of the low and middle income classes would remain higher than in the GPS. In the scenarios that do not consider a global carbon tax, the gains in purchasing power are indeed higher.

6. In scenarios with the selected additional mitigation actions, there is a slight decrease in total investment and the investment rate, the reasons for which are distinct between the scenarios that do and do not consider a carbon tax. In the scenarios with no carbon tax, this fall is a consequence of the loss of industry competitiveness due to the increase in prices. In the scenarios that do consider a global carbon tax, the fall compared to the GPS is due to a reduction in global and national economic activity.
7. The Brazilian trade surplus falls compared to the GPS in scenarios including the selected additional mitigation actions without a carbon tax, namely due to the increase in the level of prices that reduces the competitiveness of Brazilian industry. In scenario AM1+T, the Brazilian foreign trade surplus is almost the same as in GPS, while in the more ambitious scenario with carbon tax (AM2+T) the trade surplus almost doubles compared to the GPS. In this case, the higher trade surplus is due to the increase in competitiveness of national industry on account of its lower carbon footprint in the production of energy-intensive goods (including chemical products, non-ferrous metals, pulp and paper, and steel), reducing the imports of some products (such as non-ferrous metals) and increasing the exports of others (such as pulp and paper).
8. In the period between 2015 and 2030, total investment of US\$ 45 billion in the selected additional mitigation actions would be necessary for the implementation of the AM1 and AM1+T scenarios, with US\$ 169 billion required for the AM2 and AM2+T scenarios (2005 values). The GDP increase generated in the same period would total US\$ 83 billion in the AM1 and US\$ 277 billion in the AM2 (2005 values).
9. The selected additional mitigation actions result in a significant reduction of emissions by 2030. This reduction amounts to 22 % in the AM1 and AM1+T scenarios, and 39 % in the AM2 and AM2+T scenarios, compared to the GPS (*see Figure 1*). Without adopting new mitigation measures, emissions in the GPS start to grow from 2020, with an increase in emissions particularly in the energy sector and in agriculture and cattle raising. This increase could result in 1.67 billion tCO₂eq in 2030, which is above the 1990 emissions level but still below the 2005

level. In the *Additional Mitigation 1* scenario, with the implementation of a selection of significant additional mitigation actions, emissions in 2030 would be in the order of 1.3 billion tCO₂eq, keeping national emissions 5 % lower than the 1990 level. In the *Additional Mitigation 2* scenario, the implementation of a selection of more ambitious mitigation actions would allow the country to continue on a trajectory of decreasing emissions, which in 2030 would reach approximately 1 billion tCO₂eq, 25% lower than the 1990 level.

10. The scenarios illustrate a dynamic future of partial decoupling between economic growth and the evolution of GHG emissions in the country. With the reduction in the national population growth rate until stabilization around 2040, even in a scenario of high economic growth, the mitigation measures already under way in the GPS should enable a stabilization of emissions between 2010 and 2020 and a moderate increase between 2020 and 2030, well below the rate of growth in the economy. The selected additional mitigation measures could enable the country to reach a level of 51–65% of the 2005 emissions level in 2030. The ratio between emissions and GDP (measured in tCO₂eq/million US\$ of 2005), which was halved from 2 to 1 tCO₂eq per US\$ million between 2005 and 2010, would be 0.66 in the GPS, 0.5 in AM1, and 0.4 in AM2, in 2030.

3 The IES-Brasil Study and the Brazilian NDC

The Brazilian Nationally Determined Contribution (NDC) has set a voluntary target of an economy-wide reduction of GHG emission levels of 37 % in 2025 and 43 % in 2030, compared to the absolute level of GHG emissions recorded in 2005. Thus, the Brazilian NDC sets a final target of 1.2 Mt CO₂eq in 2030, which is between the levels of AM1 and AM2 IES-Brasil scenarios.

Table 2 illustrates Brazilian sectoral priorities for the case of mitigation technologies in the energy sector. The Brazilian iNDC falls within the range of the two Additional Mitigation scenarios of IES-Brasil (AM1 and AM2). According to the vision of nearly 100 experts involved in the IES-Brasil study, and considering the assumptions of a fast economic growth rate up to 2030, achieving the Brazilian iNDC targets in the energy sector seems to be feasible. Moreover, if implemented through the adoption of appropriate public policies, the Brazilian iNDC can contribute to sustainable economic growth and improved social development while simultaneously reducing GHG emissions in Brazil.

Table 2: COMPARISON BETWEEN BRAZILIAN INDC AND IES-BRASIL SCENARIOS	2010	2030	2030	2030
		iNDC-Brasil	AM1	AM2
TOTAL GHG EMISSION REDUCTIONS (compared to 2005)	40%	43%	35%	49%
TOTAL ENERGY SUPPLY (Mtoe)	268.8		520.8	533.6
% Renewable energy	45%	45%	46%	49%
% Renewable energy without hydropower	32%	33%	35%	38%
% Sugarcane products + Biodiesel	18%	18%	22%	22%
% Sugarcane	17,5%	16% (UN)	21%	21%
% Hydropower in the National Interconnected Grid (SIN)	83%	66% (UN)	69%	71%
TOTAL POWER GENERATION (average GW)	68.9		131.4	130.1
% Renewable power generation	86%		85%	87%
% Hydropower	75%		61%	63%
% Sugarcane products + Other renewables	11%	23%	25%	24%
TOTAL POWER GENERATION / GDP (av MW/billion R\$ 2005)	25.3		23.7	23.0

Source: La Rovere et al. 2016

4 Conclusions and Prospects

According to the results of the IES-Brasil study, there is a huge potential to reduce national GHG emissions through the implementation of a wide spectrum of mitigation measures, including: energy efficiency, renewable energy sources, low-carbon agriculture and cattle raising techniques, transport modal shifts, methane capture in the waste sector (landfills and sewage treatment stations), and reforestation with native and fast growth species. Many of these mitigation measures can be implemented at low cost, such as those in the agriculture and cattle raising sector, energy efficiency and increased utilization of renewable energy sources such as hydropower and sugarcane ethanol. Adopting these measures can result in a significant level of additional mitigation in relation to current governmental efforts. If other measures are made viable, such as restoration of the Atlantic Forest, large-scale production of charcoal from planted forests, significant increase in intercity freight and urban passenger rail transport, it would be possible to reach in 2030 the level of 1 billion tCO₂e, 25 % lower than in 1990 and a 49 % reduction from 2005, a higher level of ambition than in the NDC. More importantly, besides other environmental co-benefits, this deeper mitigation pathway can contribute to an increase in

economic growth, a decrease in the unemployment rate, and an increase in average annual household income, with the largest gain for the poorest families, contributing to a small improvement in the distribution of wealth, depending on the way in which these measures are implemented.

Building a low-carbon sustainable infrastructure has great mitigation potential, not to mention the various co-benefits that may arise, such as better air quality, shorter commuting journeys and improved logistics. Huge contributions to GHG emissions abatement can also be made by mitigation measures of other kinds, as shown in Table 1. In the Agriculture, Forest and Land Use sector (AFOLU), there are plenty of cost-effective mitigation actions. They generally do not require investment in infrastructure itself, but are essentially obtained through the adoption of appropriate policies and techniques. Energy efficiency is also relevant in most sectors, the largest abatement contributions coming from the industrial and transportation sectors, which still rely heavily on oil products. In the residential, commercial and services sectors, energy efficiency is generally associated with electricity consumption and, because renewables already account for a large share of the Brazilian electricity supply, the mitigation potential in these sectors is limited.

There are various barriers, both economic or financial and non-economic (legal, regulatory and institutional) to implementing such an ambitious mitigation pathway, and different means of overcoming them. Such means include microeconomic instruments and command/control tools, as well as innovative financial mechanisms to fund the higher upfront costs of mitigation measures.

There are clear signs that the previous cycle of economic growth in Brazil has come to an end, as indicated by the current economic crisis. After the adjustment policies implemented in 2015–2016, a new economic growth cycle must be sustained on a different basis. There is a wide consensus among Brazilian economists that a new development strategy should focus on higher investment in infrastructure. Therefore, given the huge potential of renewable energy resources in Brazil, a positive synergy emerges between the investment in low-carbon infrastructure and the starting of a new virtuous development cycle.

The deep political and economic crisis hitting the country since 2015 will require an update of these scenarios, with lower economic growth rates. The attainment of output and welfare levels reached in these scenarios will be delayed. On one hand, lower growth rates will delay the necessity of resorting to technologies with uncertain economic and technical feasibility and buy more time for the development of new low-carbon technologies. On the other hand, public budget constraints due to austerity policies may hamper

investment in projects needing urgent public resources and political will in order to benefit from current low international interest rates to support thriving public-private partnerships.

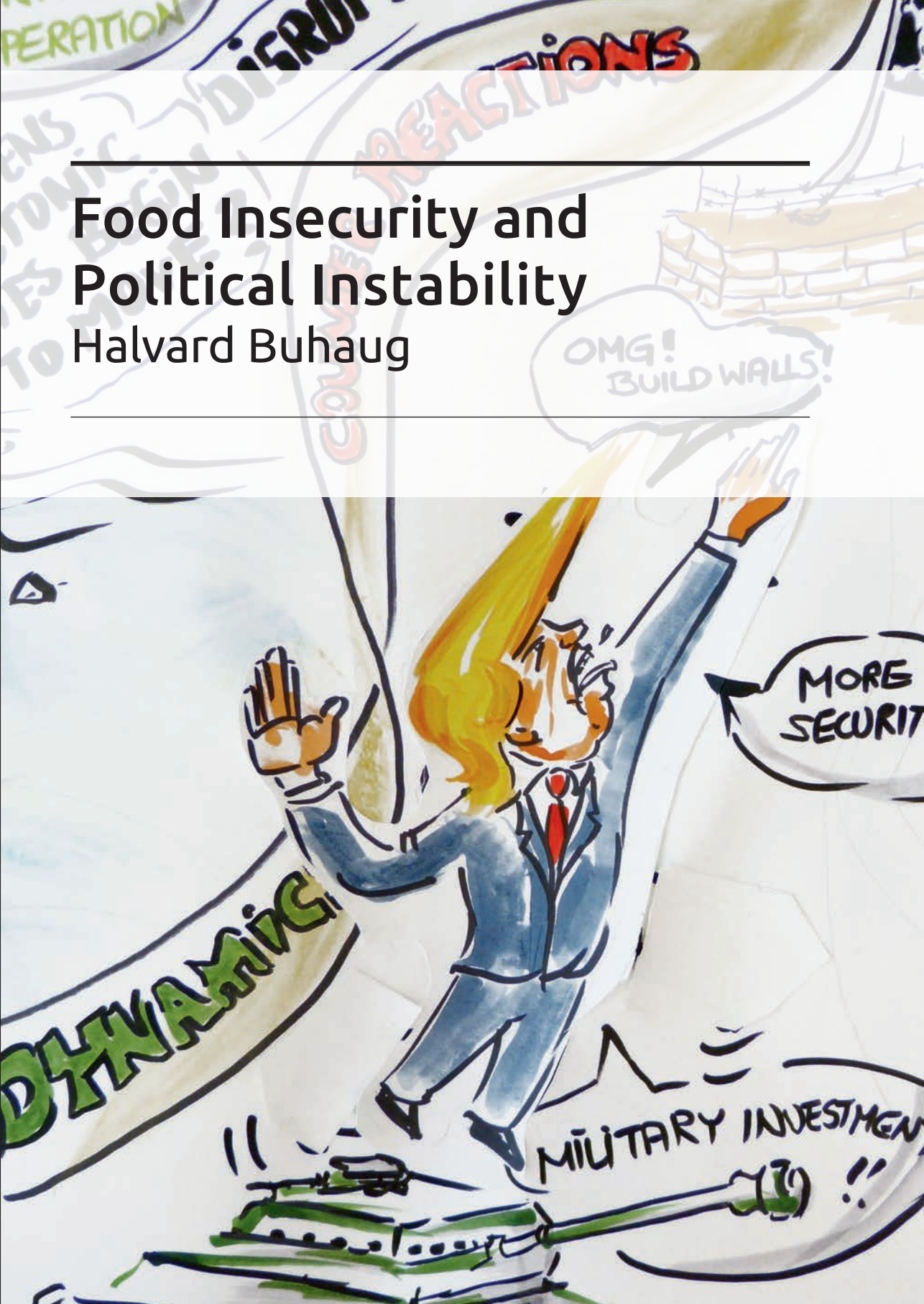
In the coming negotiation rounds in which countries review their contributions to the Paris Agreement, Brazil can move towards a more ambitious target. The continued involvement of stakeholders, as envisaged in the IES-Brasil study, may help not only in the implementation of the INDC but also its review towards a higher level of ambition.

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Food Insecurity and Political Instability

Halvard Buhaug



Introduction

After a remarkable and much-celebrated decline in armed conflict following the collapse of the Cold War system (Gleditsch et al. 2002; Goldstein 2011; Pinker 2011), the trend now seems halted at around 35–40 active conflicts per year. More worrying still, conflict casualties show a notable uptick in recent years, with 2014 being the deadliest year since the late 1980s (Pettersson and Wallensteen 2015). A third notable trend is the increasing concentration of armed conflicts in Africa and the Middle East. This is partly a result of successful peacebuilding efforts in Latin America and Southeast Asia – hotspots of interstate and civil wars during the Cold War era. However, some also point to the harsh and increasingly erratic climatic conditions in parts of Africa and the Middle East as a contributing driver of violence and instability (Johnstone and Mazo 2011; Kelley et al. 2015; Sternberg 2012). At face value, such reasoning seems to carry some merit. Contemporary civil wars are predominantly a feature of warm and tropical or semi-arid regions and the average conflict today is located much nearer to the Equator than the distribution of the globe’s population would dictate. Puzzlingly, this pattern remains statistically significant even after controlling for dominant correlates of conflict, including economic, demographic, political, ecological, and historical factors (Buhaug, Gleditsch, and Wischnath 2013). It should come as little surprise, then, that fears are mounting that climate change and possible adverse knock-on consequences for agricultural productivity will bring more conflict and instability in the future (CNA 2014; US DoD 2015).

In this essay, I discuss whether and how food insecurity may act as an intermediate mechanism linking climate variability and change with violent conflict with references to the recent scientific literature.¹ Two dimensions of food insecurity are especially relevant in this regard: food price shocks to consumers and agricultural income shocks among producers. Emerging research indicates that climate-induced economic shocks have limited influence on the risk of conflict outbreak but can affect the dynamics of violence (severity, duration) in ongoing conflicts. Food price shocks appear much more consistently linked to conflict risk, but here the role of climate and weather extremes is unclear. The discussion ends by reflecting on the often-ignored significance of the reverse link; from conflict and instability to environmental vulnerability.

¹ Climatic extremes and adverse environmental change may be associated with instability and conflict through other transmission mechanisms than food insecurity. Two commonly proposed pathways that are not considered here link climate variability with conflict via large-scale migration or material destruction as a cause of extreme weather events.

On Conflict, Climate Zones, and Climate Change

According to the Uppsala Conflict Data Program (UCDP), the leading provider of statistics on organized political violence,

the global frequency of armed conflict rose gradually during the Cold War era and peaked in the early 1990s with the collapse of the Soviet Union and the Yugoslav federation (Pettersson and Wallensteen 2015). The demise of the bipolar world order, the contemporaneous third wave of democratization, and accelerating economic globalization led some to declare the end of history (Fukuyama 1992). The triumph of peaceful liberalism lasted little more than a decade, however. During the first decade of the 2000s, the decline in armed conflict stagnated, and in recent years the frequency of conflicts and wars has returned to the levels seen three decades ago (*Figure 1*).

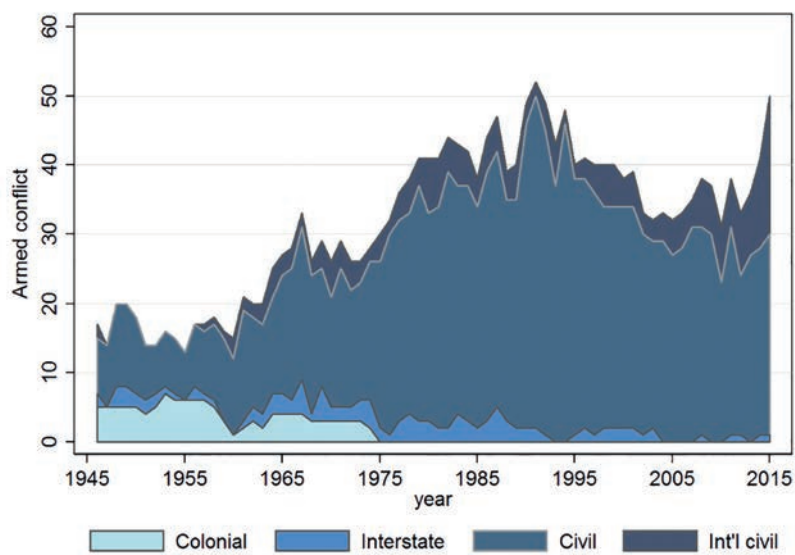


Figure 1: Global frequency of armed conflict, 1946–2015

While the post-Cold War decline of war was short-lived, the end of the East-West rivalry appears to have had a more lasting imprint on the spatial distribution of armed conflict. Latin America and Southeast Asia, previous hotspots of civil and interstate wars, now enjoy unprecedented political stability and peace. Instead, what we have been witnessing over the past couple of decades is an increasing concentration of organized political violence in Africa, the Middle East, and South Asia (Gleditsch and Rudolfson 2016).

Figure 2 illustrates the spatial distribution of armed conflict over the past half-decade and reveals that most conflict zones are located in warm and tropical regions close to the Equator. This does not, of course, mean that local climatic conditions necessarily are fundamental drivers of contemporary conflict. Population pattern and density, level of development, political system, colonial legacy, and other explanations of conflict also are unevenly distributed across space.

However, accounting for such factors only reduces but does not eliminate the statistical power and significance of the 'climate effect' (see Buhaug, Gleditsch, and Wischnath 2013 for further details).

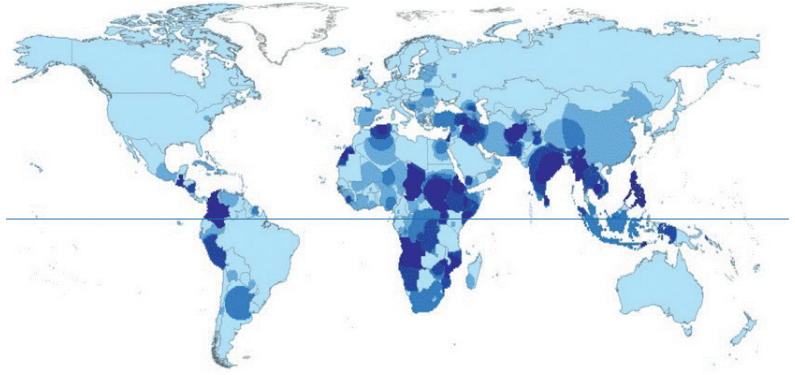


Figure 2: Density of armed conflict, 1950–2008

If common explanations of conflict are unable to account for the visible spatial overlap between certain climate zones and conflict frequency, maybe climate change and deteriorating environmental conditions are part of the explanation? Indeed, a common feature of many conflict-ridden countries today is the harsh climatic conditions they are enduring, with recurring severe droughts, unbearable heatwaves, and limited supplies of renewable resources such as freshwater, forage, and dense vegetation. One does not need to subscribe to environmental determinism to understand the challenges such conditions impose to agricultural productivity, food security, and physical well-being. And climate change threatens to make this worse.

So, to what extent do climatic conditions and extreme weather events influence the outbreak and dynamics of contemporary armed conflicts? A decade of systematic scrutiny has resulted in few robust findings, and the empirical evidence base to support the notion of a general and direct climate-conflict link is thin (Adger et al. 2014; Buhaug et al. 2014; Salehyan 2014). Lack of scientific support need not imply that climate variability is irrelevant for conflict, however. Just as exposure to climate change varies across space, so do societies' abilities to deal with climate change-related challenges. Accordingly, two similar climatic events can have very different social and security implications depending on the characteristics of the affected societies. For this reason, the conflict research community is shifting attention from climatic conditions and events themselves (which were a natural first focal point) to phenomena known to be sensitive to climate change as possible indirect drivers of conflict and instability. One such proposed indirect pathway goes through food insecurity.

Food Insecurity as an Intermediate Link?

Within the context of the climate-conflict nexus, two aspects of food insecurity appear particularly relevant. The first is loss of agricultural income and livelihood. One of the strongest and most robust correlates of civil war is poverty (typically operationalized as low GDP per capita), which facilitates rebel recruitment and obstructs effective governance (Collier and Hoeffler 2002; Fearon and Laitin 2003). To the extent that climatic extremes and environmental change increase poverty and despair, then, they could also contribute to increased risk of societal instability and conflict.

Thus far, there is little evidence that agricultural income shocks constitute an important trigger of conflict outbreak. Most quantitative comparative investigations of rainfall-induced income shock and civil conflict conclude that the two are at most only weakly correlated (Buhaug et al. 2015; Ciccone 2011; Koubi et al. 2012). Some even report that violent conflict is more likely in affluent years, contrary to the scarcity theory, suggesting an important tactical element in the climate-conflict calculus (Witsenburg and Adano 2009; Theisen 2012). However, some studies find that worsening environmental conditions and resulting adverse impact on agro-economic performance can affect conflict *dynamics* by escalating hostilities and making a peaceful resolution to ongoing conflicts less likely (von Uexkull et al. 2016; Wischnath and Buhaug 2014), even if other, non-climatic factors are found to be more influential.

The second proposed manner in which climate-induced food insecurity can be a catalyst of violence is via food price shocks. Rapid increase in consumer price of food can put severe strains on household budgets and human well-being, especially among the urban poor in developing countries who typically spend up to half of their disposable income (or more) on food. Absent a rapid and appropriate response by the state (e.g. price control measures; ration cards; unemployment benefits), the affected population may have few coping options beyond protest and competition. There is no shortage of examples of conflicts and revolutions that broke out during periods of heightened food prices, the 2011 wave of uprisings across the Arab world being a recent case in point. At the same time, the historical connection between climate variability and fluctuations in the market price of food is weak (Tadesse et al. 2014). For example, the 2010–2011 international food price crisis was driven mostly by peaking oil and energy prices and related increases in transportation and fertilizer costs, cynical commodity market speculation, and increased biofuel production. Moreover, domestic food policies, and the extent to which volatilities in international food trade translate into local consumer prices, vary greatly between countries

(Smith 2014), pointing to the importance of context in determining social vulnerability to economic shocks.

In sum, the jury is still out regarding the true role of food insecurity (in its many guises) as an intermediate link between climate variability and societal instability. So far, available empirical evidence suggests that climate-induced income shocks have a modest effect on conflict risk. Food price shocks, in contrast, can serve as a powerful trigger of social unrest in societies where more fundamental grievances are prevalent, but in these instances the link to weather fluctuations and climate change is often weak.

Discussion

Based on a reading of the best available scientific evidence, it appears that climate-induced food insecurity at most exerts an indirect and conditional effect on conflict risk – and only in societies where more fundamental causes of social grievances are widespread (e.g. poverty and inequality, political exclusion, corruption, illiberal and oppressive political systems). However, climate and conflict may be causally linked in other ways as climate impacts and conflict are endogenous to one another (Gartzke and Böhmelt 2015). Indeed, the reverse association, from armed conflict to climate risks, is likely many times more powerful than the conventional climate-conflict link. Conflicts and wars cause enormous human suffering, destroy material goods and infrastructure, trigger capital flight and brain drain, and deter investment in future development. For this reason, civil war is development in reverse (Collier et al. 2003; Gates et al. 2012). Low level of economic development, poor growth, and political instability in turn are major contributors to environmental vulnerability. In the words of the IPCC, ‘conflict strongly influences vulnerability to climate change impacts’ (Adger et al. 2014: 12).

Taken together, these insights give a glimpse of what we might expect in the future. Stable and wealthy societies possess the skills and resources and (most often) also the political will to address acute climate-related challenges and impacts, such as severe droughts and floods, in an appropriate and peaceful manner. Conflict-affected societies, in contrast, many of which struggle with endemic political chaos, low levels of political trust, corruption, and poor economic growth, may be unable to adapt to and cope with these challenges on their own. The result may be a vicious cycle of instability and underdevelopment and – absent concerted international assistance – an increasing gap between the stable, developed global North and a failing global South (though see Hegre et al. 2016 for a more sophisticated approach to modelling future conflict scenarios).

The latter insight carries an important policy message; conflict resolution and peace building constitute the most effective climate resilience strategy in war-torn regions. Without peace and stable, well-functioning political institutions, it is hard to see how societies can address existing and future security challenges imposed by climate change. Accordingly, while crop modification, development of irrigation systems, improved seasonal weather forecasts, establishment of insurance schemes, exploitation of renewable energy resources, and other adaptation policies may have significant positive effects in the short run, comprehensive sustainable socioeconomic development depends on lasting peace and a predictable political environment encouraging trust-based social interaction and long-term investments in material and human capital.

Acknowledgments

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Part III

Humanities and Narratives of the Future

Writing Narrative Scenarios: Experiences from Technology and Security Foresight

Karlheinz Steinmüller



PROF. DR.)

Introduction

Scenarios are one of the main tools of foresight. They provide a structure to discuss possible and preferable futures, they inspire dialogues about options for action, and they are broadly used as well by companies and by organisations for supporting strategic planning and decision making (Van der Heijden 1996; Fink and Siebe 2016).

In general, scenarios contain, as well, a qualitative (verbal) description of a future situation and the path which leads to this situation. In the words of Herman Kahn, one of the pioneers of scenario methodology, scenarios are 'a hypothetical sequence of events constructed for the purpose of focusing attention on causal processes and decision points' (Kahn and Wiener 1967: 6).

Scenarios help in clarifying thinking about the future, since they map existing expectations and assumptions and put the focus on chance (uncertainties) and choice (human action). Being based on an appreciation of existing uncertainties, all scenarios are hypothetical. For the exploration of possible futures, it is therefore standard practice to generate not one but alternative scenarios. Used in a creative and open way, scenarios allow 'thinking out of the box' in order to overcome too narrow perceptions of what might be possible and plausible. If monitored regularly, they allow nascent developments to be spotted and action to be taken early. But one has always to bear in mind that scenarios are not forecasts. Even if you have generated a rather comprehensive portfolio of scenarios, the future will not look exactly like any one of them. At best, one will come close to a good approximation of the 'real future to come'.

Basically, one has to distinguish two kinds of scenarios. Exploratory scenarios serve to explore the range of possible futures, whereas normative scenarios serve to describe wishful states of the future (or, very rarely, undesired futures that are to be avoided). Both types are in a way complementary: On the one hand, exploratory scenarios include normative aspects, since the values, interests and wishes of the main actors have to be taken into account. Normative scenarios, on the other hand, should consider what framework conditions realistically have to be expected, otherwise they become utopian.

	Explorative Scenarios	Normative Scenarios
Basic question	<ul style="list-style-type: none"> • 'What kind of future do we have to expect?' 	<ul style="list-style-type: none"> • 'What kind of future do we want?'
Modality	<ul style="list-style-type: none"> • Possible or probable futures 	<ul style="list-style-type: none"> • Desired, preferred futures (rarely: futures to be avoided)
Examples	<ul style="list-style-type: none"> • Scenarios for decision making or strategy in organizations • Model runs in societal, economic or environmental modelling 	<ul style="list-style-type: none"> • Vision processes in cities • Visionary scenarios for applications of new technologies • Scenarios for corporate communication
Method	<ul style="list-style-type: none"> • Different exploratory scenario techniques • Forecasting techniques und modelling 	<ul style="list-style-type: none"> • Normative-participatory methods • Creativity methods (future workshop) • Back-casting techniques
Multiplicity	<ul style="list-style-type: none"> • Portfolio of alternative scenarios to one topic 	<ul style="list-style-type: none"> • Usually one scenario for one topic
Description	<ul style="list-style-type: none"> • Frequently rather abstract outlines or semi-narrative formats 	<ul style="list-style-type: none"> • Frequently narrative formats

Scenarios are used for quite different aims in quite different ways. According to purpose and context, scenarios are presented in different formats. Scenarios that are used as an inspiring input to a future creation workshop or for a municipal future discourse are subject to other criteria than exploratory scenarios in the framework of a research project. Depending on their purpose and on their client or addressees, scenarios are either formulated in technical terminology or written in a popular way. In research projects or in corporate foresight, a short description – slides with main aspects and charts – is sufficient. Standard for most scenario studies is a rather detailed representation of the respective future situation usually combined with main milestones on the road to this situation.

Sometimes, a historiographical approach is chosen and the scenario is written in the likeness of history books. One might regard this 'dense description' (in the terminology of historians) as a semi-narrative style of presentation: Sequences of causes and effects are exposed, turning points (sometimes called 'game changers') with groups of actors and their interests highlighted. A narrative description in the strict sense 'tells' the scenario like a story with protagonists and their motives and emotions; this mode of presentation is most appropriate for broad communication. Besides words, images are increasingly used; sometimes scenarios are illustrated by elaborate pictures, sometimes they are displayed as comic strips or video clips, and sometimes even exemplified by diegetic objects (Kirby 2009; Steinmüller 2016). In the end, a scenario with a strong and convincing narrative resembles

in structure and mode of narration a short story, and more specifically a science fiction story.

Experiences with Scenario Projects

In the last two decades, I was involved in more than ten projects that generated either semi-narrative historiographical or fully fledged narrative scenarios. In the following, some examples are given:

Starting in the year 2002, the German Federal Ministry of Education and Research commissioned a research dialogue called 'Futur'. In the framework of this large project, guiding visions for a broad scope of emerging technologies were developed by several focus groups. Twelve narrative scenarios helped to specify everyday situations in which these technologies could be applied. These scenarios were deliberately written like short science fiction stories with well-chosen characters, a very specific plot and even a more or less pointed ending (Gaßner and Steinmüller 2009). They had topics like 'Tina and Her Butler' about an elderly lady and her virtual assistant (Gaßner and Steinmüller 2013). Another project funded by the same ministry tackled governance questions of forestry with the extreme time horizon of the year 2100.¹ The long-term impacts of different forestry policies were outlined in three historiographical scenarios against the background of climate change, demographics and technological change. To demonstrate specific points, perspectives of actors and decisive events were highlighted in separate boxes (Schulz-Montag et al. 2009).

Quite another approach was taken in the project 'Problem Child Demographic Change' (2008–2011). This project aimed to deconstruct some public myths around societal ageing. Exploration meant, in this case, identifying possible impacts of demographic change in fields as diverse as education, healthcare and individual financial provision. Six narrative scenarios helped to make these impacts evident. Personally, I found it most interesting to write a counterfactual present-day scenario² on the assumption that there was no drop in birth rates during the 1960s (Bieber 2011).

Recently, the EU commissioned a study on the future of the European transportation industry.³ The project team decided to develop a mainly pessimistic and cautionary 'dark scenario' for the time horizon 2030 based on existing trends and a 'bright scenario' for the year 2050 combining positive answers to existing challenges on the background of a deep cultural change in the transportation industry. Both scenarios were written in the historiographic style and accompanied by two less comprehensive but more extreme 'side-scenarios' that highlighted specific developments (Moraglio 2015).

¹ 'Futures and Visions Forest 2100. Long-Term Perspectives of Forest and Land Use – Developmental Dynamics, Fundamental Normative Attitudes and Governance' (2007–2009).

² Counterfactual or virtual history has recently gained more academic recognition; see, for example, Ferguson (1999) and Steinmüller (2009).

³ RACE2050 – Responsible Innovation Agenda for Competitive European Transport Industries up to 2050' (2014–2015).

In 2011, the Berlin-based Center for International Peace Operations started a project 'The Future of Peace Operations 2025'. Its main aim was to contribute to the conceptual evolution of peace operations and to inspire debate among experts, practitioners and decision-makers. In an exploratory scenario process, based upon expert workshops with key factor and consistency analyses, four historiographical scenarios were developed. 'They should also help promote a change from the current, mostly reactive approach to crises and conflicts in the world to a more proactive or preventive one.' (von Gienanth, Hansen, and Köppe 2012: 2) To give an idea of semi-narrative, historiographical scenarios, we quote in the following the short description of the scenario 'Regional Diversity':

Regional organizations are clearly in charge – including of peace operations. Transnational challenges – from climate change to resource scarcity, organized crime, state fragility and violent conflicts – are increasing the need for functioning global governance structures. However, after the "rise of the rest" and the "decline of the West", existing multilateral structures failed to accommodate the new powers who in turn found ways to accommodate themselves – largely through a network of regional organizations. As a consequence, the UN has lost its role as the major multilateral player in the area of peace operations and the Security Council is no longer the primary legitimizing body for such operations. While the regionalization of peace operations could have led to "regional solutions for regional problems", key actors alternate between cooperation, competition or mere co-existence without much consideration for each other. For peace operations, this to and fro is frequently getting in the way of sustainable successes. Fragile states remain a major challenge but state fragility fatigue limits reliable support and stabilization initiatives. (von Gienanth, Hansen, and Köppe 2012: 16)

Another set of scenarios was produced in the project FESTOS 'Foresight of Evolving Security Threats Posed by Emerging Technologies' (2010–2012). This project, commissioned by the EU in the framework of FP7, was supported by a large international group of experts from the fields of technology foresight and security and risk research. Its starting point was the assumption that new technologies may be greatly

beneficial, but they may also have a dark side, either due to unintended effects or because they may be directly abused.

The main objective of FESTOS was to raise awareness with respect to security threats posed by the potential abuse of new technologies like nanotechnologies, robotics or biotechnologies: 'Looking ahead to the year 2030, this foresight study scanned the horizon of different fields of technology. Possible means of prevention and policy measures were studied in the context of trade-offs between security needs and the freedom of research and knowledge.' (Auffermann and Hauptman 2012: 1) With surveys, expert workshops and intuitive scenario generation, the project followed its slogan 'Unless we invent new threats, we won't be able to prevent them.'

The project team deliberately looked for threats that have from a present perspective a rather low likelihood but a high impact.⁴ During breakout groups within an expert workshop, core elements for four scenarios were identified. These elements were further elaborated to narrative scenarios following closely the style of short science fiction stories (Peperhove et al. forthcoming). In all these scenarios, technological breakthroughs were set into a societal context:

- 'Cyber-Insects Attack!': Swarms of artificial bees attack people and cattle. Since the origin of this behaviour is unknown, conspiracy theories abound.
- 'The Genetic Blackmailers': Individual DNA is abused to blackmail a politician – everybody would know his health risk factors and specifically his high propensity to abuse alcohol.
- 'At the Flea Market': Intelligent nano-based household appliances self-destruct in reaction to a wireless signal. People are desperately trying to get hold of good old pre-nano devices at a flea market.
- 'We'll Change Your Mind...': Terrorists use a 'virus' for health implants with the aim of manipulating voting behaviour in particular of the older generation. Whoever gets close to a politician of a certain party feels sick.

Looking back at these and other projects, one can observe that certain challenges repeatedly appeared. First of all, the assumptions behind the scenarios and the style of presentation had to find the commitment of the whole team. But methodological preferences and presentation predilections are different, even within expert communities. Narrative scenarios were in some cases rejected outright by some experts at first, with comments like 'What is this fairy

⁴ In foresight terminology: 'wild cards'; see Steinmüller and Steinmüller (2004).

tale good for?’ Therefore, much effort was put into explaining the advantages of narrative scenarios and in general in establishing group ownership of the scenarios.

From the narratological point of view, a basic challenge consisted in the necessity to integrate all ideas, all relevant aspects into a coherent text within given length restrictions – and at the same time to tell a convincing, plausible and credible story with living (and not cardboard) characters. Publication needs added their specific rules and restrictions. Last but not least, if you are enlarging on a future topic in a comprehensive scenario, you have to use many details either illustrating your point or making up a background, a kind of future scenery against which the core elements of the scenario are presented.

The challenges encountered in scenario writing are similar to certain problems in writing science fiction. It is therefore helpful to compare the approaches of foresight and science fiction, and to see what foresight can learn from science fiction.

Learning from Science Fiction

There are many definitions and many theoretical approaches to science fiction⁵, which we need not consider here. But one can follow Moskowitz, when he pins down the basic feature of science fiction:

Science fiction is a branch of fantasy identifiable by the fact that it eases the ‘willing suspense of disbelief’ on the part of its readers by utilizing an atmosphere of scientific credibility for its imaginative speculations in physical science, space, time, social science, and philosophy. (Moskowitz 1974: 11)

Seen from this perspective, science fiction performs thought experiments. For short stories, in particular, the starting question is most frequently ‘What if...?’⁶ The author elaborates on possible impacts and consequences, searching for the most dramatic ones. Such literary thought experiments follow their own rules – similar to the rules of foresight (Steinmüller 2016).

Like foresight (or more generally all research), science fiction is a collective enterprise. Writers advance on concepts introduced by other, earlier writers; they use a common vocabulary of (fictive) technical jargon. Like science, science fiction has experienced phases of accumulative growth and paradigm shifts.

Since Dennis Livingston proclaimed the utility of science fiction for foresight (Livingston 1978), science fiction has

⁵ See, for example, Suerbaum et al. (1981); Weber (2005).

⁶ Asimov (1984: 215) notices that sometimes the starting question is ‘If this goes on ...?’ or ‘How could ...?’; cf. Ravetz (1997).

been used as a source of motivation and inspiration for project teams, as an idea pool for innovation (see, for example, ESA 2002), as a mind opener in workshop settings and sometimes even for early warning and as a source of weak signals. Recently, diegetic prototypes from science fiction movies have attracted academic interest (Kirby 2009).

The central advantage of science fiction is that it adds social contexts to its speculative ideas. A science fiction story only ‘eases the willing suspense of disbelief’ if it has convincing characters and interesting plots, in short: if it mirrors (like all genres) human behaviour – and produces a flavour of real life. Putting some invented technology into a futuristic setting does not suffice; science fiction lives from a kind of artistic technology assessment. Or, in the words of writer and futurist Frederick Pohl: ‘A good science fiction story should be able to predict not the automobile but the traffic jam.’ (Lambourne 1990: 27)

	Science Fiction	Foresight
Aim	<ul style="list-style-type: none"> • Entertainment 	<ul style="list-style-type: none"> • Decision making
Approach	<ul style="list-style-type: none"> • Intuitive & creative • But also with method 	<ul style="list-style-type: none"> • Methodological • But also with creativity
Guiding questions	<ul style="list-style-type: none"> • What is imaginable? • What is the most surprising, striking, terrifying that can happen? 	<ul style="list-style-type: none"> • What is possible/feasible? • What are plausible impacts? • What is desirable?
Quality criteria	<ul style="list-style-type: none"> • Originality • Strength of imagination • Narrative (dramatic) quality 	<ul style="list-style-type: none"> • Plausibility, realism • Methodological transparency (e. g. explicit value statements)

Of course, science fiction writers are much freer in their speculations and quite regularly transgress the borders of the possible and plausible and the scientifically and technologically feasible. Their aim is to create dramatic, gripping plots, so they emphasize surprising consequences, unintended effects, collateral damages and potential abuses of technologies. One may ask whether science fiction has the more realistic perception of the human being and of society.

Methodology: Writing Narrative Scenarios

Writing narrative scenarios is an art in itself; it operates at the crossroads of scenario generation and creative writing. This starts with the choice of the form of the presentation – all options of fiction are available, from short story and monologues of fictive characters, dialogues or debates

of several *dramatis personae*, to interviews, reports and commentaries, essays and reviews of fictive books. Besides stories and reports, frequently a keynote speech on the occasion of a celebration or anniversary is chosen, where the speaker looks back at the developments and events leading to the present (i.e. future) state of affairs.

It goes without saying that different literary forms imply different formal requirements as to style and length. The expectations of potential addressees or recipients (often based on earlier experiences with scenarios) have to be met; certain forms are better suited for specific topics. A frequent choice is a semi-narrative historiographical description, as mentioned above. It follows the model of history books, or historical essays. It includes a so-called 'dense description' of the future situation, the wider context, and the evolution of situation. Where appropriate, very specific, concrete, tangible details illustrate the image of the future, but in general the description stays on a more abstract level, indicating, for example, the actions of certain groups of actors and definitely not of individual persons with their names and backgrounds and idiosyncrasies. The latter is the case in fully fledged narrative scenarios that follow the model of short stories.

According to our experience (Gaßner and Steinmüller 2006, 2009), writing narrative scenarios can be broken down into seven steps or phases.⁷ The procedure starts with bounding, the delimitation of the topic for the scenario, the definition of the focus. Usually, the time horizon and the overall character of the scenario (mainstream and rather plausible vs. wild card and extreme, optimistic vs. pessimistic...) are also agreed upon.

The main elements of the scenario are – as a rule – developed in one or several workshops, with stakeholders and/or with experts, depending on the subject. Along with trend extrapolations or other exploratory tools, creativity techniques like mental travels into the future are employed here. The next step consists in elaborating an exposé for the scenario. This includes the characters (protagonists) with their names, ages, professions and other necessary features, but also the general setting of the scenario, its background, assumptions about society, technology, politics, economy, environment as far as needed, and last but not least a general idea and structure of the plot: the 'conflict' (if there is one), the position of the protagonists, issues to be addressed by discussions or by means of the unfolding plot. This comprehensive programme has to be put in concrete terms. In the movie industry, this step is called a 'storyboard': the sequence of actions and reactions of the protagonists, the plot in close-up resolution with its exposition, its unfolding, turning points, solution and ending.

After these preparatory steps, scenario writing in the narrow sense of the word follows. This implies much more than simply

⁷ These stages of scenario development are not precisely shaped according to the model of story writing; rather, they follow the model of producing a movie.

working along the storyboard. All essential scenario elements identified earlier have to be integrated into a coherently developing story. Writing a scenario is also the proof of these ideas – whether they really fit into a well-rounded whole.

In principle, feedback from the complete scenario team would be helpful after each step, including feedback from the workshop participants. Usually, however, feedback can be invited only once or twice, and to obtain feedback on the written draft scenarios is most important and necessary for content and process quality. Input from the team – even if contradictory comments come in – is welcome for finalizing the scenarios. Besides that, these comments provide ideas for debate. Moreover, feedback from all team members is a decisive means to establish ownership. As the final step, the scenario is published, presented to the addressees, and depending on the project aim, conclusions and implications are drawn and recommendations derived.

The abstract elements and crude first ideas of the scenario are enriched from step to step; real life is brought into the scenario: the context of everyday life of the protagonists, their societal and biographical backgrounds, their wishes, fears, motivations, the general political framework conditions, ethical and environmental considerations, technological and organizational innovations – and all that is needed to make the scenario plausible and convincing.

Writing a scenario, one has to ask: Which protagonists fit best into the scenario story? Who are the winners, losers and 'heroes' in the world of the scenario? And which developments lead to the future of the scenario? What were important events, moments of decision? Most of these questions have already been answered in preceding steps, but they have to be reconsidered in the light of the complete story of the scenario.

According to our experience, narrative scenarios are best presented with some kind of short topical introduction about the aims of scenario project and, if necessary, trends and other assumptions... The scenario as such should be preceded by reading instructions (Advice to Readers) about the uses and limitations of scenarios and recommendations on how to read the scenarios. Often marginal notes are useful to emphasize certain points or to give additional comments. But one has to bear in mind that scenarios should never be lengthy.

Narrative scenarios have on the one hand certain advantages in comparison with more abstract forms of presentation. For a narrative scenario, ideas have to be elaborated more specifically. The context of everyday life makes gains and pains of change more transparent and hints at forces that promote and forces that resist change. It shows whether technologies function socially or not. Summing it up: It produces additional insights.

On the other hand, there are important disadvantages: With each decision about the future technological and societal background you gather new uncertainties. One has to pile up one hypothesis to the other. And the additional insights may have a questionable character. With each decision about minor items, as well as with the choice of the protagonists, their backgrounds and their motivations, personal convictions and biases of scenario writers may creep into the scenario. Wording is important; attributes may convey subconscious value statements. One has to be very careful about each word... Writing scenarios like a story surely needs more time than drawing a rough sketch. Sometimes even more research in specific items is needed.

In scenario writing, there is always a fundamental tension between two structures: The 'idea line', defined as the sequence of scenario elements or portfolio of scenario ideas that have to be conveyed, and the 'plot line', defined as the sequence of events that belong to the plot, as the unfolding of interactions of the characters.

Idea Line	Plot Line
Presenting Content	Story Telling
<ul style="list-style-type: none"> Integration of all relevant ideas 	<ul style="list-style-type: none"> Plausible and dramatic plot
<ul style="list-style-type: none"> Tangible descriptions, bargain between abstract concepts and specific details 	<ul style="list-style-type: none"> Convincing characters, convincing motivation and interaction of protagonists
<ul style="list-style-type: none"> Causal relations of elements 	<ul style="list-style-type: none"> Intriguing beginning, arc of suspense, and pointed ending
<ul style="list-style-type: none"> Short, specific, focused 	<ul style="list-style-type: none"> Free play of imagination
<ul style="list-style-type: none"> No overload, no unnecessary decorations or side-ideas 	<ul style="list-style-type: none"> Playful decorations

Conclusion

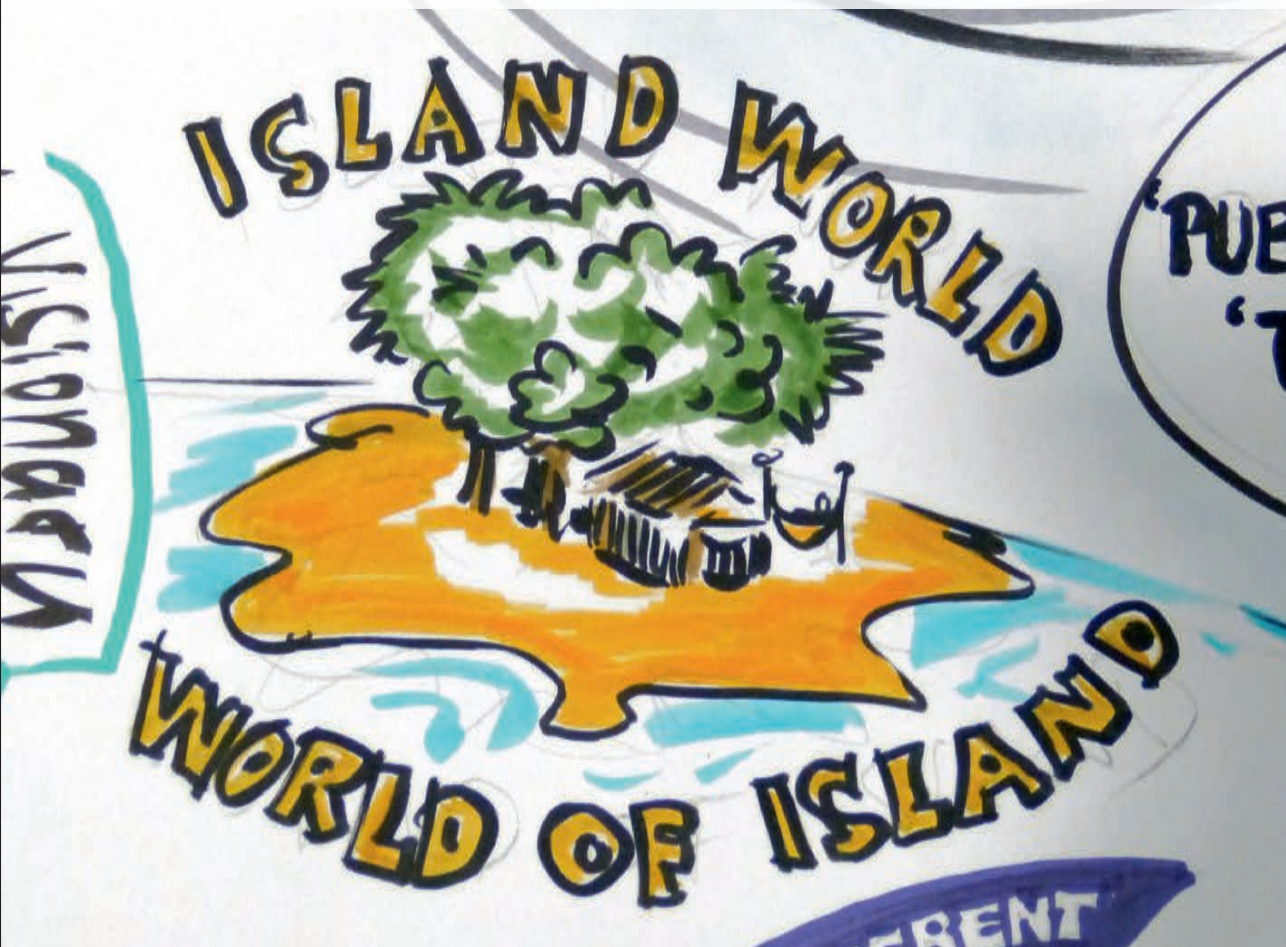
Well-written narrative scenarios help to overcome the limitations of science fiction as well as of foresight. Where science fiction often 'overdoes it', sacrificing everything for the sake of a good story, narrative scenarios follow strict methodological rules. Where foresight often sticks to a narrow and abstract 'realism' and lacks imagination, narrative scenarios are based on creative 'thinking out of the box'. Good narratives are an excellent means of communication. They combine interesting and relevant content, a 'news value', with a credible, plausible setting and a convincing story with inspiring ending. They reach their audiences if they are tailored to the target group(s) and if they provide lines of action available for their addressees. But even with truly imaginative and justly plausible scenarios, the Future remains a terra incognita.

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Human*Tree and the Un/
Making of FutureS:
A Posthumanist Reading of
Wanuri Kahiu's *Pumzi*
Susan Arndt



European moralities have been largely pillared on a Manichaeism of nature versus culture, rendering culture as superior and hence entitled to tame nature. For one thing, this rhetoric positions animals, plants and inanimate materiality as nature as an antithesis to humans as culture. For another, humans themselves are subdivided along this very rhetoric, which can be traced back as far as antiquity.¹ Taking this thesis as its point of departure, this essay will explore the legacy of the nature-culture distinction in the context of the superior-inferior divide with regard to 'being human'. Thus framed, the article will make a plea for thinking beyond the concepts born of this divide, mobilising FutureS as a complementary category of analysis. This approach, in turn, will be utilised for a posthumanist reading of Wanuri Kahiu's *Pumzi* and its negotiation of agencies in the un/making of futureS.

¹ For a detailed exploration of this rhetoric cf. Arndt, Susan (2012). *Die 101 wichtigsten Fragen: Rassismus*. München: C.H. Beck.

1 The Dead End of Critical Thinking – and Beyond

Aristotle, for example, suggested that the Greek men were the only ones capable of practising reason, while Greek women can learn and Greek men can understand it. Those called, from the Greek racist perspective, 'Barbarians'², however, were not even able to understand reason and hence could be used by the Greeks as means and tools (cf. Isaac 2004: 207–11, passim). Discursively, this idea was fed into Christian narrations about difference (one need only consider Eve's punishment for wanting to taste the fruit of the tree of knowledge) and was dis*continued throughout Medieval societal hierarchies right into the Renaissance and its humanism. Its celebration of human individuality resulted in anthropocentrism, which would set the human apart from nature. The Enlightenment again inhabited this rhetoric while adapting it, together with the notion of humanism, into contemporary findings and needs, on one hand, and equating reason with progress, on the other, thus suggesting that in the absence of reason there could be no progress, and vice versa. In doing so, the colonial space was positioned in what Dipesh Chakrabarty calls 'not-yet' societies that were forever confined to the 'waiting room of history' (Chakrabarty 2008: 9). Analogously, both People of Colour and women (Black women even more so than white women), amongst others, would be 'not-yet' humans. In other words, in a linear conceptualisation of time, white Christian males were always ahead in terms of time and progress as compared to those they declared to be their 'inferior Others'. This European account of reason/intellect and progress is the gist of the matter in narratives that hold culture as antithetical to nature, suggesting: the more culture, the more human; the more nature, the less human. Throughout modernism and to date, this ideologem has rendered a binarism of gender, sexuality,

² The infamous term 'Barbarians' was initially used by the Greeks to other all those who did not speak Greek (not understanding their language, they would call them 'brr-brr sayers') and was later used as a homogenising label for all those who were not Greek.

religion, race, nation, class, and ability and the respective modes of discrimination all too well-known to this world – be it sexism, racism, classism, the discrimination against differently abled persons, non-Christians, queer people etc.

The abovementioned pattern of ‘classification’ according to underlying and multidimensional apparatus of discrimination has been generating power structures, respective epistemologies and social positions that have been practised and performed, affirmed and resisted, analysed and resituated in societal contexts, activism, arts and academia. Although today’s offshoots of critical thinking – be it feminism, queerism, postcolonialism, Marxism or posthumanism – celebrate intersectionality, this classification still works within the linguistic legacy of the nature-versus-culture logic and its constructed criteria for scaling ‘being human’. It is true; deconstruction employs a double movement of thought away from, for example, ‘race’ or sex as a biological entity and towards *race* and gender as a social position (cf. Raman 1995: 255). Yet, by using these categories, critical thinking still gets mired linguistically and, thus, epistemologically in century-old powerful narrations of othering, as well as the very binarism of culture/nature that informs it, being translated into what Abdul JanMohamed calls the Manichean allegory ‘of good and evil, salvation and damnation, civilization and savagery, superiority and inferiority, intelligence and emotion, self and other, subject and object’ (JanMohamed 1983: 4). The ongoing presence of this Manichean allegory, in turn, keeps forcing resistance into a rhetoric of defending the ‘othered’ as is, for example, the case with Léopold Sédar Senghor’s ‘Négritude’ and Hélène Cixous’s ‘écriture féminine’ as celebration of Black or female emotion. Even though designed to subvert, the defensiveness at work here keeps powerful stereotypes alive. In due consequence, for critical thinking to be able to truly transgress given structures, discourses and epistemologies, it needs to think beyond the Manichean allegory of nature-versus-culture, its conceptualisations of difference and the rhetoric of defensiveness. Wary of this current aporia, this essay employs one of many possible categories of analysis capable of overcoming the Manichean rhetoric of securing power via othering: FutureS (cf. Arndt 2017).

2 FutureS as a Critical Category of Analysis

The ‘category of analysis’, FutureS, interferes into ‘future’ as a linear sequence of past, present and future and hence of progress. In doing so, it insists on three semantical pillars that induce me to speak of ‘futureS’ rather than ‘the future’. While having the capitalised ‘S’ in common, the ‘F’ is only capitalised (i.e. ‘FutureS’) when referring to ‘the category of analysis’,

³ In due correspondence with the usage of 'FutureS' as a category of analysis, I will use it (in terms of grammar) as *singulare tantum*, while futureS as a pluralised term for talking *differently* about 'future' keeps requiring the grammatical plural.

while 'futureS' is my term for talking about the subject of 'future' in a deconstructed way.³

Firstly, the capitalised S in both FutureS and futureS suggests that 'future' does not exist in the (simplicity of any) singular. This very 'S', *secondly*, draws attention to the fact that futureS are intersected and moulded by complexities and coexistences of 'glocal' encounters of conflicting, competing and complementary agencies, interests, contingencies, possibilities and options in the un/making and (not) sharing of futureS. Throughout global histories, some futureS have buttressed each other, while some have deflated each other and others have prevented each other's existence; some have advanced and some hindered the other. There are futureS that neither did nor will ever happen, because one futurE thwarted the other – and in this instance, the capital 'E' puts emphasis on this erasure of given pluralities. Consequently and *thirdly*, futureS (as moulded by and moulding the category of analysis 'FutureS') are made and shared unevenly by power-coded agencies: 'The future is already here, it's just not very evenly distributed', as internet visionary William Gibson (1999) suggests. Indeed, every struggle about power, freedom and justice is about futureS and every struggle about futureS is to strive for access to power, freedom and justice. After all, futureS' polyphony, complexity, reflexivity and relationality are coded by the structures and discourses of power, along the grammar of racialisation, gender, sexuality, religion, health, ability, age and nation. The social positions thus coded decide, to a high extent, about the very impact and agency a person or collective may have in shaping (their own and other people's) individual and collective futureS and their share of it. Ultimately, however, the struggle over futureS is not determined by power constellations alone. Rather, both power and futureS can be negotiated and un/made by agencies. Contextualised by power and powerlessness, privileges and deprivation, ethics and unscrupulousness, responsibility and the lack thereof, agencies desire and fear, fight and sustain, accept and negotiate, experience and forget, build and destroy futureS. In fact, agency is power's most virulent protagonist and antagonist at the same time.

Thus framed, in the following, FutureS will be mobilised as a category of analysis for a posthumanist rereading of fictionalisations of futureS as performed by (resistant) fictive and factual dreams and hopes and their power to procreate alternate futures. My argument will scrutinise the linear notion of time, reading past, present and future as being entangled in a cyclical causality: whatever has (not) happened keeps on affecting the present and its futureS. Moreover, I will discuss the intersection of memories, dreams and non*human agencies so as to demonstrate how they scrutinise the present and un/do this present's futureS. To put it simply, I will analyse

non*human agencies that can affect the un/making of futures and how the revisiting of the past (via memory) intersects with interventions into the present (via dreams) in the process. By way of example, I will discuss Wanuri Kahiu's short film *Pumzi* (Kahiu 2009), looking at its post-anthropocentric presentation of non*human agencies and the un/making of futures in the interaction between technology and organic lives as well as the subsequent transgressing of the nature-culture divide and its binarisms.

3 Who is Afraid of Dreams in Wanuri Kahiu's *Pumzi*?

Wanuri Kahiu's *Pumzi* is set in an 'East African Territory' 35 years after World War III, known as the 'Water War', in a post-apocalyptic survival community called Maitu, which, as we learn, is a Kikuyu word meaning 'Our Truth'. Maitu's truth, as the film gradually reveals to us, is that the world outside is dead; an indoctrinated belief that has confined humans to life in this technology-governed habitat.

The opening high-angle shot of Maitu, resembling a brownish box in the midst of a wilderness, fades into newspaper clippings with headlines ranging from the all too familiar 'Greenhouse Effect' to the more distressing 'Whole day journey in search of water'. These, together with the sight of skeletons and other remnants of dead animals as well as seeds stored in several jars, usher in the atmosphere of museum archives. The wide shot that follows introduces us to the protagonist, Asha, asleep at her desk, which faces a screen projecting some illusion of green life. A quick glimpse of her REM jump cuts into the dream itself, in which she, wearing a white dress with green patterns, appears full of joy and laughter, reaching for and flying towards a single green tree on top of a hill in the middle of a desert.

In the midst of her ecstasy, the foreboding, authoritative, siren-like voice of an electronic device is heard, incessantly warning 'DREAM DETECTED' and commanding Asha: 'Take your dream suppressants.' (1:12–1:20) Awake, she lands back in her hi-tech surroundings, dressed in her dark khaki uniform, her blue eye shadow connecting the lifelessness of her conscious state to the lingering residue of her lively dreamscape. Obediently taking a pill, Asha is now wide awake, back in Maitu's reality.

Asha takes a bathroom break, walking us through what appears to be the cyclical routines of an ordinary day. She enters a hall with glassy walls that features Black men and women (as skinny yet in better physical shape than herself) cycling on fixed bikes. What seems to be a fitness centre at first soon turns out to be human bodies generating electric energy needed for Maitu's self-sustaining ecosystem. Upon passing a checkpoint, Asha is

granted a daily dose of some 100ml water. In the bathroom, she removes parts of her 'armour', wiping the sweat off her body with a rag – which must pass as bathing in this environment – and wrings it into a container filled with her urine, which she then places in recycling machine that turns those bodily fluids into drinkable water. Catching a cleaning woman's timid gaze, Asha shares some of her daily water ration with her, which suggests that water is a currency in Maitu and distributed unevenly among its inhabitants according to their social status. These two sequences familiarise us with Asha's own class, which as historian or archivist, is seemingly above the cleaning woman and the labouring bodies on bikes and treadmills.

The opening scene is reiterated and intensified when Asha returns to her office in the museum, passing the corpse of a tree, placed above a dated newspaper article featuring the picture of a tree under the heading: 'There goes the last tree' (4:05). This header corresponds to the name of her workplace 'Virtual Natural History Museum': the death of the very last tree represents the absence of non-human organic life in Maitu, which can only be accessed and remembered virtually and hence merely as an optical illusion and a bygone reality. This is at least what the museum keeps signifying: organic life cannot exist beyond the glassy walls of Maitu anymore and Maitu is hence the last refuge for human life but at the expense of reducing 'being human' to survival only.

This survival is, however, more about the illusion of being human than living. Various shots throughout the film feature human bodies at work, following orders. As is the case with dreams, emotions are generally suppressed, as are human interaction and communication. Intra-human communication being reduced to mimicry and watching each other, verbal communication takes place only in the realm of the digital and the virtual: the words that are heard belong to a voice-over that seems to merely translate the digitised communication in which the human body's only communicative movement is that of typing. Thus verbal communication between human and technology is dominated by the latter's medium and governed by its language only.

The next sequence shows Asha holding a box 'with no delivery note' (4:29); it has been addressed to her but in the place of a returning address it shows geographical coordinates. As soon as Asha begins to curiously examine the box, which contains a jar, she is asked by a virtual woman on a screen, named Denti: 'Status report?' (4:19). Assuming that the box was sent by Denti, Asha reports that she will examine it; however, Denti denies being the sender and instructs Asha to report it to the security board (4:30–4:35). Rather than obeying her instructions, Asha starts the analysis and finds out that the soil in the jar (as diagnosed by a computer's voice) has 'abnormally high water content' and 'no radioactivity' (5:05–5:20).

An understanding dawns on her that she will later put as: '[T]he soil is alive.' (8:04) This is momentous news indeed, since it contradicts Maitu's 'our truth' that animate life is impossible outside its container-world, thus making organic living within Maitu the sole 'option' for human survival. Yet the reliability of this truth is now being questioned by Asha. In terms of age, she is too young to have ever known anything other than the post-WWII Maitu. Yet, being the keeper of a virtual history of *natural* life, she is at home in the (hi)story of organic life and its death. This memory might be a crucial component to making her dream come true and envisioning alternate truths and futures.

Upon touching and smelling this new soil for the very first time in her life, Asha falls back into her recurring dream (5:21–6:06) – a dream that was suppressed, yet did not stop in the wake of the museum's memories. This time, however, the dream is not as gentle as in the previous one. Asha, once again wearing her green and white dress, falls into deep water, watching drowned roots of a tree while struggling to breathe. While she was smiling, indeed laughing in the first dream, now she seems to be horrified by the lack of oxygen. Nevertheless, this existential fear turns right into hope when Asha sees a tree bathed in sunlight, metaphorically referencing photosynthesis as the guarantee of human survival. A flashlight that might symbolise the aha-moment wakes her up in the double sense of the word: she stops fainting/dreaming, ready to cultivate her dream/agency in the soil.

The agencies of memory*dreams, soil and a seed prompt the protagonist Asha to insist on the possibility of alternate futureS (cf. Assa 2017), releasing a latent autonomy in Asha that makes her decide, somewhat hesitantly, to pursue the memory's dream-agency rather than taking a 'dream suppressant'. In doing so, she conceives a human*tree: she sows the dormant Mantis seed (that was seen stored in a glass jar in very early shots of the film), reunifying it with the soil and using her (body's) water, as partly recycled from her urine and sweat, to nourish it. The seed as a symbol of reproduction and potential futureS, takes its chance and agency, beginning to grow with rather supernatural rapidity. Insofar as Asha's name translates as 'breath' in Kiswahili and as 'hope' in Hindi, aptonymically we are facing a breath of hope: the hope that human beings can breathe oxygen as recycled from the carbon emanated by trees. 'I am tasting its growth potential [...] This could mean... there is life on the outside' (6:55–7:05), says Asha. And while her words addressed to Denti still sound computer-animated, the growth potential of both the soil and her hope is featured by the background music that switches from electronic futurity to epic emotions and thus, iconographically, from technology to humanity.

This hope, however, is thwarted by Denti's 'That is impossible' (7:06) and the consequent emergence of Maitu's body of

governance, as represented by three Black women, on Asha's screen. They insist that '[t]he outside is dead' (7:53). Thus, rather than sharing Asha's hope that 'the soil is alive' (7:54), the council asks Asha to take her pills, denies her request for an exit visa and insists on the nullity of her findings: 'You are not qualified to determine that. Forward your work to science lab' (7:56–8:02). Thus while the council privileges Maitu's 'our truth' and those who confirm its technology-backed scientific evidence, Asha insists on the veracity of her own knowledge, revealed by the soil and the seed to her as the keeper of memory and the dreamer of alternate futures: 'But I know it is alive. It has to be. Look!' (8:04–8:24). Asha scans her dream onto the screen and the council woman on the left seems to be tempted to reach for this dream, while the one on the right keeps closing her eyes. Yet the woman in the centre, standing a step ahead of the other two (and thus seemingly in the most powerful position) denies inspection by the others, ordering Asha again to take her dream suppressants and subsequently cancelling the communication. Denti reappears, only to withdraw her fragile solidarity completely (if there were any), rebuking Asha for having been compromised by her 'ailment' since she stopped taking her medication: 'I can't help you any more' (8:43–8:55). This 'any more' might again suggest that she *did* help her earlier and might even have been the one who sent Asha the soil in the first place, although now failing to be resistant enough to pursue the agency of dreaming towards alternate futures.

Asha, in contrast, stops following orders; she grabs a compass, eager to map her route to the coordinates written on the box. Not long afterwards, three guardsmen barge in to destroy the museum and drag Asha out, transferring her to the hall of physical labourers, condemning her to toil alongside the same people we saw her passing by before – which might even suggest that some of them too might have been dissident ex-dreamers.

Obviously, the council of Maitu is afraid of Asha as empowered by the agency of the seed in the soil and her memory-driven dream, which are apparently stronger than that of the dream-suppressant pills. Therefore, the council decides to separate Asha from her memories (and their dreams) and the seed*soil: Yet why does the council feel endangered by this very alliance of the in*animate? Is the council representing human or organic interests at all? Or only those of technology? After all, who would be afraid of memories and dreams (of organic life outside of Maitu) – and why? Who gives the orders as represented by the computer voice and the council? Who would lose most when organic life is reborn of cross*species solidarity? Well, humans would not be harmed by the resurfacing of (dreams about) organic life at all, would they? Strictly speaking, technology would not be endangered either.

Yet within Maitu, technology that seems to be the only one speaking and giving orders would lose control and power. So, in a nutshell, if technology is seemingly in control of Maitu and afraid of alternate (organic) futures, are we not facing a techno-dictatorship in need of human labour to survive? Knowing that human labour can only be controlled if subjected to the illusion that the outside world is dead and that security and survival are only guaranteed within Maitu's technologised habitat, eventually such a techno-dictatorship would be eager to suppress dreams and agencies for alternate futures. According to this logic, the existence of the Mantis seed and its potential growing in the soil and thus Asha's memory-woven dreams are a significant menace to the techno-dictatorship, which (in their logic) needs to be eliminated. Therefore, the council needs to expel Asha from the museum to disconnect her from her memory, triggered by her dreams, as well as from the seed sown in the soil, as it cannot blossom without Asha's water and her dream-agency of finding a soil able to secure the seed's survival and its futures as a forest.

Thus the security that is apparently granted by Maitu is eventually dedicated to the established order of the techno-dictatorship only. Humans, in contrast, turn out to be exploited by it and eventually given hardly more than an illusion of some safety. Human obedience as needed by the techno-dictatorship is gained by complementing this illusion with the fear of death mixed with a mirage of freedom. In due correspondence, its walls of glass reinforce Maitu's illusion-based governance and its void promises of freedom and planetary belonging. Therefore, *true organic living* (beyond mere survival) and freedom and safety (beyond being imprisoned and exploited) can only be gained beyond the (b)orders and alleged security of Maitu's 'our truth' – and it is found in 'Pumzi', in a trans*species solidarity beyond its glassy gates.

About to give up the very agency to reach out beyond Maitu, Asha's earlier sharing of water with the white cleaning woman now returns to her as solidary agency. While Asha is dragged out of her memory, she insists on hoping and seemingly takes the seed with her, yet fails to secure the compass – which has, however, been pilfered by the cleaning woman. Telling her so by mere passing by, the dream and possibility of escaping towards futures resurfaces in Asha: she flees to the outside with the fecundated soil, eager to plant the seed of her memory-woven dream*tree.

After a long bewildered march in a seemingly endless desert, Asha has (the aspired) hallucination of seeing a green tree. It is here that Asha plants the seed, nourishing it with the little drops of water left to her – and her body. The camera zooming out, her death is portrayed as the beginning of futures of a cross*species recreation of organic life. The blossoming seed turns into a fragile human*plant that becomes a human*tree

surrounded by the desert. The camera then pans out into an aerial shot depicting the fast-paced growth of the human*tree while a neighbouring rainforest seeps into the picture, turning desert-yellow into leaf-green, the whole uninterrupted sequence framed by letters spelling PUMZI.

Thus, ultimately, by donating her body across species and metamorphosing into a human*tree, Asha and other in*animate actors create futureS for planet earth that overcome the culture-nature divide and position humans in mutual entanglements (in terms of genes and conviviality) with other variants of organic life. In doing so, futureS here does not concern time and duration but becoming (true) at all – or remaining a truth, so to speak. After all, Asha will have arrived in a futurE that is synonymous with our present: a fragile and endangered environment. Asha's death as the beginning of futureS of a re-greened earth, able to provide water to organic life, is, ultimately, nothing but the state-of-the-art manifestation of this planet's situation – bluegreen, alive and endangered. Thus *Pumzi* intervenes into the present on behalf of futureS that need to be un/made before they can eventually happen: futureS that have to overcome the destruction of the planet, its water resources and all its in*organic entities by humans and their technologies.

Even if we do not know whether Asha's donation will endanger the techno-dictatorship in her world, for one thing, *Pumzi* suggests to *our* world that cross*species solidarity and responsibility beyond any culture-nature divide will generate alternate futureS most needed in the very now and for futureS. Moreover, dreams are narrated as agents of inspiration, imagination and intervention that offer opportunities that are beyond neither Asha's nor our own reach. Thus framed, dreams are narrated as the windows for alternate futureS, engaging the poetics of imagination in order to transcend reality. Just as Asha is a powerful actor because she dreams (virtual) memories, dreams are also generally one of the main sources of change and resistance against univocality, abused power and discrimination. They offer alternative scenarios and hence are powerful even when dedicated to unknown phenomena that cannot even be predicted yet. Dreams happen to become true, even if reached beyond one's own time by others and even by means that have not been envisioned yet (cf. Arndt 2017).

Secondly, *Pumzi* performs the overcoming of the nature-culture divide and its impact on conceptualising human beings and the times they inhabit. Rather than narrating time linearly and as progress, in *Pumzi* times are all entangled. While the film's overarching slowness puts emphasis on given continuities in cycles of power and oppression in a sense of 'nothing ever changes', the ending happens eventually in an almost light speed sequence, thus putting emphasis on change. Yet, ultimately, the future thus screened intervenes into the present.

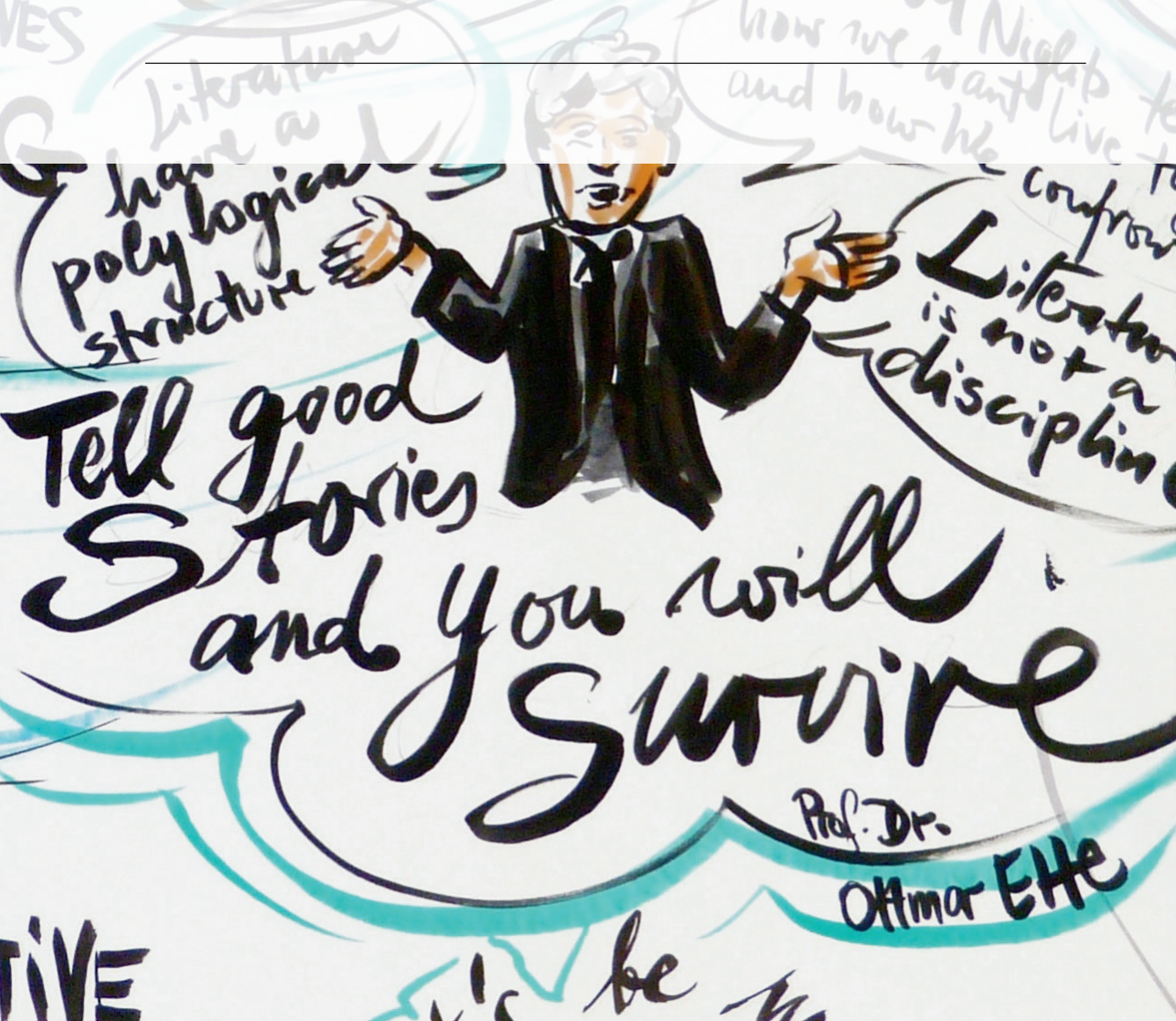
In doing so, *Pumzi* narrates futureS as causal, i.e. as caused by the present and its past and the memory thereof, as well as reliant on cross*species interactions of responsibility beyond anthropocentrism and its history of classism, sexism and racism: Asha's expression of solidarity with the cleaning woman and the latter's subsequent reciprocation is just one side of the coin here; Asha profits from the agencies of dreams, the soil and a seed as well, but pays it forward by dedicating her life to organic life to thrive. On the other hand, the manifestation of their collective agency in saving the planet subverts the speculative tendency of mainstream works of fiction and sci-fi narratives that portray the (white) man as the only true saviour. In line with the discovery of the most ancient remnants of human presence on this planet (those of Lucy rather than Christianity's Eve) a Kenyan woman once again becomes the site of an origin narrative in *Pumzi* – a Kenyan film that hosts a Black woman's body, knowledge and memory-woven dreams as the backbone of a human*tree*soil agency towards alternate futureS beyond the nature-culture divide and its power-driven narrations about difference.

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Writing Between Worlds as Probing the Future: Europe and the Literatures of the World

Ottmar Ette



An Unruly World

How can we think and write about a world in which Europe (as a place of *movement*) has always been the vector-like *lieu de mémoire* of a myth? Ever since the young and beautiful Europa appeared on a beach of the Mediterranean Sea, Europe has also appeared in the light of rapture and temptation, displacement and rape, looting, deportation and migration. Published in spring of 2009 and reflecting on an epoch of worldwide, total unruliness (*dérèglement*), Amin Maalouf's *Le dérèglement du monde* pointedly names all the dangers which – at the beginning of the 21st century – have led humanity to the edge of an abyss. Ever since this novelist and essayist, born in Beirut in 1949 and now dividing his time between Paris and the Ile d'Yeu, raised the issue, the situation (as we all know) has become more intense, drawing us to the close of the current phase of accelerated globalization. It is quite obvious that Maalouf's argument implies a worldwide scale:

Nous sommes entrés dans le nouveau siècle sans boussole. Dès les tout premiers mois, des événements inquiétants se produisent, qui donnent à penser que le monde connaît un dérèglement majeur, et dans plusieurs domaines à la fois – dérèglement intellectuel, dérèglement financier, dérèglement climatique, dérèglement géopolitique, dérèglement éthique. (Maalouf 2009: 11)

Obviously, we need not dwell on additional dimensions of this fundamental and worldwide *dérèglement*, such as a *dérèglement migratoire* or the unruliness of political discourse. We are more disturbed and more restless than ever, trying to readjust the *Boussole* which also appeared as central metaphor in the title of Matthias Enard's 2015, *Prix Goncourt*-winning novel. Whoever was expecting Maalouf's carefully constructed opening lines to his essay to continue as a deeply pessimistic perspective on the planet and our world-society might find himself pleasantly disappointed: This Lebanese-born representative of a WritingBetweenWorlds (Ette 2016b) is prone neither to pessimism nor to nostalgia and is certainly quite immune against a sclerotic romantic agony or *Weltschmerz*. As if he were implicitly responding to Samuel P. Huntington's talk of a *Clash of Civilizations*, published in 1996, our author aims to provide points of reference for conviviality, a new bearing for the planetary ship of fools to follow.

Writing in French (and therefore beyond his mother tongue), this writer and essayist is probing for a differentiated panorama of the long-lasting process of globalization, whose cultural dimensions have traditionally been underestimated. Debates on economic policy and the billions required to

remedy a persistent financial crisis, political tensions within Europe due to the so-called migrant crisis and Brexit have done nothing to remedy this blind spot. However, it has been and still remains a grave mistake not to pay sufficient attention to, or even completely ignore, the cultural, intercultural and transcultural implications of globalization. As we have seen in recent years, the consequences of this oversight can be catastrophic. Thus, Amin Maalouf's message is a clear one: It is the cultural dimension of human life that will determine our fate in the future.

Monologic responses are no longer sufficient. Instead, we need fundamentally *polylogical* solutions that allow for a shared life in peace and difference. Obviously and on a planetary scale, conviviality (Ette 2010) will be the central challenge for the 21st century: Conviviality will be the challenge and lemma of our times. The essay is preceded by a well-chosen motto by William Carlos Williams, which refers to the vital importance of human survival knowledge (ÜberLebenswissen): 'Man has survived hitherto / because he was too ignorant to know / how to realize his wishes. / Now that he can realize them, / he must either change them / or perish.' Our survival is at stake.

Following Amin Maalouf, it is of the utmost importance that we no longer view the respective 'other' through the lens of heterostereotypes, such as the ones suggested to us by ideological, religious or mass-cultural constructions. We must resist unilateral constructions of the other which have also reappeared in so-called intercultural dialogue. What is more: Ways of thinking beyond alterity have become vitally important. We must aim to view the infinite forms of cultural difference and differentiation with a fresh glance – through the eyes of many others (and not simply *the* other) – *simultaneously* thus from a multitude of perspectives. When it comes to achieving this, the author of *Léon L'Africain* emphasizes that nothing can replace literature:

L'intimité d'un peuple, c'est sa littérature. C'est là qu'il dévoile ses passions, ses aspirations, ses rêves, ses frustrations, ses croyances, sa vision du monde qui l'entoure, sa perception de lui-même et des autres, y compris de nous-mêmes. Parce que en parlant des «autres» il ne faut jamais perdre de vue que nous-mêmes, qui que nous soyons, où que nous soyons, nous sommes aussi «les autres» pour tous les autres. (Maalouf 2009: 206)

Literature is the best counter-venom against all forms of mass-cultural or propagandistic simplification or schematization. Literature speaks to us from a wide range of languages, cultures and communities. Beyond the homogenizing and

outmoded concept of 'world literature', literatures of the world grant us access to highly diverse cultural and transcultural configurations, which – in turn – allow us to think and act in polylogical life-situations, or at least facilitate such practice. Literatures of the world are not only polylogical *lieux de mémoire*, but seismographs for future events: Writing in different languages, Georg Forster, Alexander von Humboldt and Adalbert von Chamisso were already aware of this.

Today, following those phases of accelerated globalization which ranged from the late 15th to the mid-16th, from the mid-18th to the early 19th and finally from the 1980s to our days in the 21st century (Ette 2016a), literatures of the world are the privileged space for experimentation with and – more importantly – experience of cultural complexity. As potential schools of thought, literatures of the world may teach us complexity, polylogical thinking and open-endedness. Due to the fact that literatures of the world do not spring from a single source, but from multiple sources, not from a single but from many origins, cutting across and surviving a great number of spaces and times, languages and cultures, political and economic systems, their structural characteristics are polylogical and open-ended, making them the true (and historically legitimized) laboratories for a transareal and transcultural future.¹ Despite continuing and constantly shifting asymmetries, they are not dominated by a single spatial and temporal logic, a single model of understanding or even a single language and culture.

Not so much concerned with roots as with routes, relying on numerous languages and ever since the beginning of the first phase of globalization, this kind of literature is represented by great authors such as Leo Africanus or Garcilaso de la Vega el Inca, while in the 18th century we might think of Anton Wilhelm Amo (who was brought to Germany as a slave and won an international reputation as a 'black philosopher'). These are literary modes of expression and experience which have little interest for the sediment-like strata of history. Instead, they search for vectors and oriented movement: The only thing foreign to them is stasis.

Literatures Without a Fixed Abode

The question whether or not literature offers some specific type of knowledge has long since become a focus of current debates. For instance, it is becoming clear that the humanities and cultural studies are moving beyond the once dominant theme of cultural memory and refocusing on knowledge. By raising the issue of knowledge in literature, we are also addressing the question of the social, political and cultural relevance of this knowledge within distinct societies of knowledge and information in the 21st century.

¹ I develop this perspective on literatures of the world in Ette, Ottmar (2017): *WeltFraktale. Wege durch die Literaturen der Welt*, Stuttgart: J.B. Metzler.

In the past quarter of a century, a perspective oriented towards the past has produced important results while also suppressing the prospective elements contained in texts such as *The Epic of Gilgamesh*, *Shi Jing* or the stories of *One Thousand and One Nights*. However, literatures of the world not only function in terms of cultural memory or attempts at locating the present. Instead, they unfold a prospective thrust, looking towards possible realizations of the future. Literatures of the world express a type of life-knowledge which interacts with the past and present, pointing to life-forms and life-norms of the future. What does literature want and what is it capable of? How can we better understand literature's specific, vector-like logic as *lieu de mémoire* through a poetics of movement?

Speaking for literary and cultural studies, the time has come to view *Europe* as a space of intersecting movements of migration. Thus we may continue the project of a poetics of movement which conceptualizes literature in motion and as motion, thus emphasizing a *WritingBetweenWorlds*. Though rooted in a long history, the latter will continue to gain momentum in our century. Many Nobel Prize winners mentioned below, but also Salman Rushdie, Jorge Semprún, Norman Manea, Elias Khoury, Emine Sevgi Özdamar, José F.A. Oliver and Yoko Tawada are good examples. The literatures of the world will increasingly be literatures without a fixed abode. European literatures of the future will be part of these developments, including a drive towards translingual writing – the current flows of refugees should make this sufficiently clear. The future will not be dominated by an ever more homogeneous world literature. Instead, the polylogical unfolding of literatures of the world will mark a present and future beyond national literatures (which will obviously survive as well). As something that has grown historically, the epoch of world literature has itself become a part of history: It is a Eurocentric thing of the past.

Today, we are aware of the fact that the temporal foundations of our thinking and understanding of reality lost much of their importance during postmodernity, as historical and chronological foundations did during European modernity – without fading away completely, obviously. At the same time, spatially organized concepts and modes of thinking have become more important, as have spatial modes of perception and experience. Beginning in the second half of the 1980s, at the latest, new spatial concepts stopped emphasizing territoriality and refocused on mobility. Literatures without a fixed abode were an essential factor in this process, with Nobel Prize winners such as Mario Vargas Llosa, Herta Müller, Gao Xingjian and V.S. Naipaul. The debates of the 80s and 90s – up to the present day – did not remain confined to cyberspace, but expressed spatial projections, mappings and remappings of the postcolonial and the clash of cultures. Even Samuel P. Huntington's ideological

Clash of Civilizations or Niall Ferguson's *Civilization: The West and the Rest* could still be viewed as elements of a geoculturally or geostrategically tainted spatial turn. Literatures without a fixed abode, however, show us how to exit the topographical mappings of (disturbing) otherness.

Beyond Otherness

We must step out of or maybe even say goodbye to a thinking based on otherness, which provided the foundation, epistemology and methodology for entire philosophical traditions in the 20th century, such as French philosophy, as Vincent Descombes correctly pointed out. A poetics of movement, which has become an urgent necessity, should no longer hypnotically stare at the opposition of the familiar and the foreign, the self and the other. Instead, taking those attempts at conceptualizing this difference as a difference of self and other *within us* (as in the thinking of Julia Kristeva and Tzvetan Todorov) to new heights, a poetics of movement would embrace a cosmopolitan vision, interested in fundamentally complex relationships and – as literatures of the world would show – polylogical modes of thinking.

Thus, we must replace the still dominating, seemingly natural history of space with a history of *movement* in which pre-existing mappings are conceptualized in terms of vectors and dynamic, mobile space-time. Saint-John Perse, Samuel Beckett, Albert Cohen and Elias Canetti were the pioneers of these multilingual, polylogical maps of movement for a Europe of the future. Literatures of the world help us imagine this kind of shift, due to their ability to represent vector-like patterns of writing and the imagination. Literatures without a fixed abode are the most intense, sensual and aesthetic manifestations of this tendency.

As *lieux de mémoire*, the literatures of the world are markings on maps of movement. We cannot conceive of Europe – as its mythic origins show – without the space outside Europe and constant flows of migration. The Europe of the past, the present and the future – *in* movement and *as* movement – is a perfect demonstration of how necessary multilingual and polylogical thinking is – but also of the dangers which arise from the constant urge to turn one's back on the future and get immersed in memoria. It is in today's world – and this is what the concept of vectorization is all about – that older movements become recognizable again: As movements, they are present and readable within the stable structures and mobile structuring of spaces – just as migratory movements are traces of pathways. In a *WritingBetweenWorlds*, we are able to identify these traces. Since the last quarter of the 20th century, literatures without a fixed abode have unfolded drastically, usually implying

translingual and transcultural forms of writing, linked to migration. This means that, in more radical and permanent ways than ever before, all elements and aspects of literary production have been set into motion. There is much to be learned from this. We are witnessing a generalized vectorization of all (spatial) relations. WritingBetweenWorlds develops new concepts, allowing for new ways of understanding: this also – and especially – applies to *lieux de mémoire*. As laboratories for multiple logics, literatures of the world have traversed the centuries, cultures and languages on offset and decentred paths, accumulating a knowledge about life within life. This knowledge can help us bridge an abyss which – as a representative of a literature without a fixed abode was obviously keen to point out – is getting deeper and more menacing. Cautioning us while programmatically stating it at the same time, Amin Maalouf writes in his essay:

Ce qui est en cause, c'est le fossé qui se creuse entre notre rapide évolution matérielle, qui chaque jour nous désenclave davantage, et notre trop lente évolution morale, qui ne nous permet pas de faire face aux conséquences tragiques du désenclavement. Bien entendu, l'évolution matérielle ne peut ni ne doit être ralentie. C'est notre évolution morale qui doit s'accélérer considérablement, c'est elle qui doit s'élever, d'urgence, au niveau de notre évolution technologique, ce qui exige une véritable révolution dans les comportements. (Maalouf 2009: 81)

The WritingBetweenWorlds of the present shows us the pathways towards successful conviviality. Here, and resisting the signs of our times, different points of origin also probe and even engender new futures. and even engender new futures.

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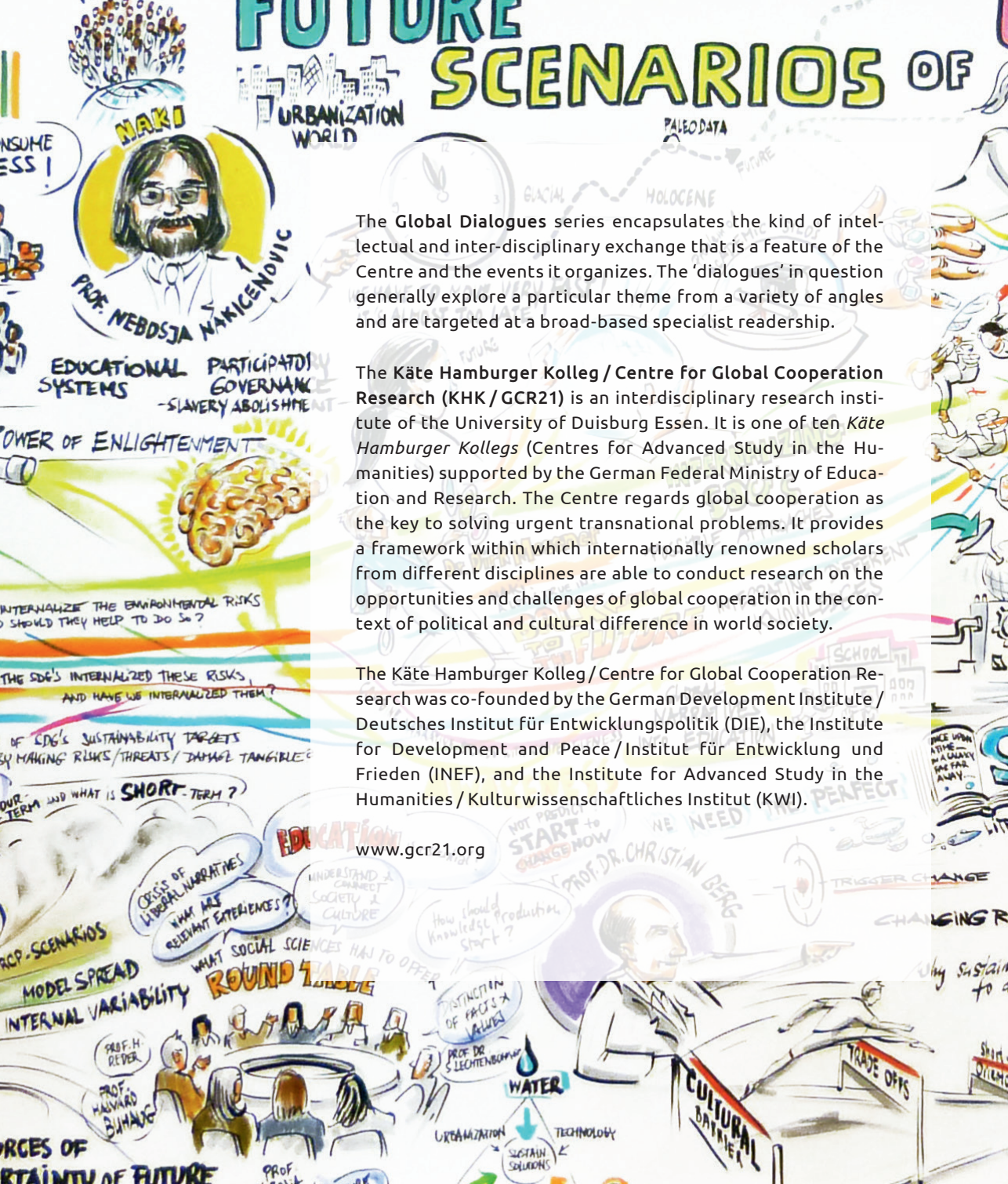
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